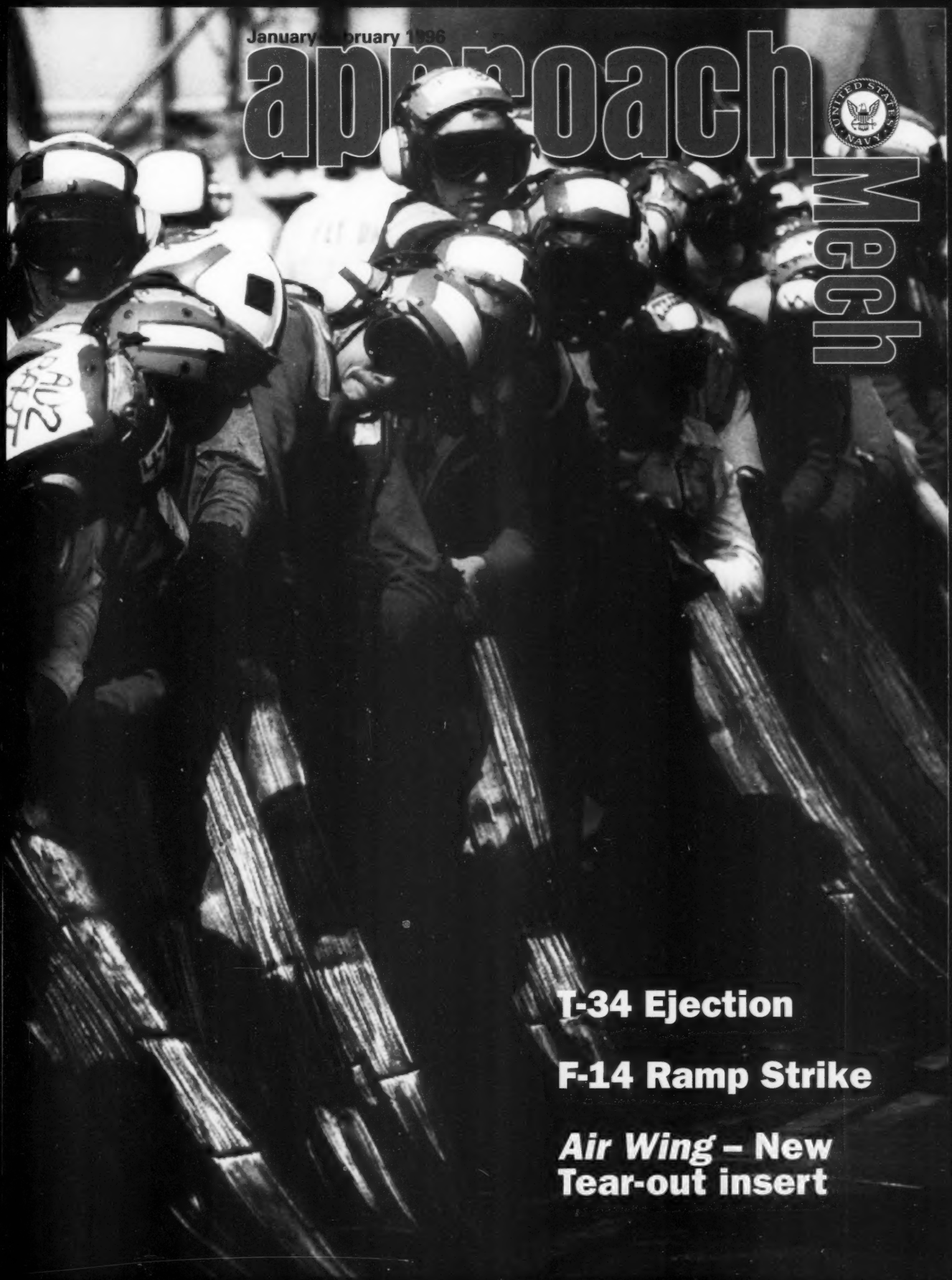
January - February 1996

approach Mech



T-34 Ejection

F-14 Ramp Strike

Air Wing – New Tear-out insert

The Stick Strikes Once Again

by Peter Mersky

Aviator is ejected through the canopy of his T-34 after his control stick unlatches his harness. **pg. 2**

A two-page insert of hot topics and statistics. Tear it out and post this newsletter until it's old news, then flip it over as a poster. **Centerspread**

RAMP STRIKE

by LCdr. Ken Skaggs

Tomcat pilot doesn't clear the rounddown during a night waveoff. **pg. 20**

On the Cover:
The flight-deck crew on board USS *George Washington* (CVN 73) prepares to rig the barricade during a training exercise. (*Photo by PH1 Craig McClure*)

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by Lt. John L. Larson

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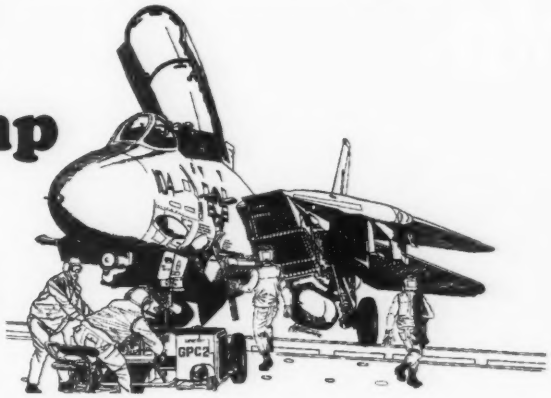

Flap Trap

by AMSC(NAC/AW) Richard J. Grace

When you're hanging around aircraft, keep your hands to yourself if you don't like pain. **pg. 39**

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The Stick Strikes Once Again

by Peter Mersky

After recovering from the spin, the student sensed a lot of wind and noise. When he turned to look at the rear cockpit, it was empty!

One of the most bizarre mishaps in the last five years involved the loss of an experienced instructor and a T-34C. There are several closely related aspects of this tragic event, which include bad flight planning, tunnel vision on getting the "X," faulty product design, not sharing vital information, and an inexperienced student placed in an untenable situation.

We could have prevented this aviator's death and the loss of the training aircraft. The hardware problem that caused the instructor's unintentional ejection from the aircraft, the SNA's subsequent bailout and loss of the aircraft, had been known for some time, yet nobody did anything to fix it.

The problem concerns the five-point harness-attachment buckle which locks the lap and shoulder straps of the harness at a central point near the pilot's waist. Faulty design allows the strap ends to come out of the buckle when the control stick hits the lever on the buckle's faceplate.

The problem with the harness buckle was well known. Indeed, another primary training squadron had kept a log of incidents involving inadvertent buckle releases, ultimately recording more than a hundred occurrences. Yet, they never made this damning evidence public or acted on it. Why? Changing safety officers or not perceiving the importance of the information are not good excuses,

especially if people spent so much time and effort compiling the file. The old problem of keeping the information to yourself finally came back to kill someone.

Three years before this fatal mishap, interim changes to the T-34C NATOPS called for the pilot to check his assembly's position vis-a-vis the control stick. "Improper adjustment of the restraint harness," the NATOPS paragraph warned, "may allow the control stick to contact the rotary buckle and result in inadvertent release of the harness."

The fix? "If... the control stick can contact the rotary buckle, the aircraft shall not be flown until that harness is readjusted and the buckle repositioned to remain clear of the control stick."

The best that can be said of these changes is that they made prospective crewmen aware of the problem. But the rewording certainly didn't do enough to prevent the recurrence. Body size and position in the seat can change the physical relationship of the buckle to the stick. Whether the seat is high or low also makes a difference. No, the solution was not in how to wear the harness, but in the design of the harness release.

Here's how the faulty buckle became a link in a tragic chain.

The lieutenant IP and his ensign student naval aviator (SNA) were scheduled for a FAM-8, which introduces spins to the SNA. The weather was not good, although the instructor thought it was clear enough to launch in the late afternoon. The skipper's SOP required VFR with ground reference,

JOC Kirby Harrison

...the lieutenant became a projectile, fired through his canopy.

and conditions around the area were, at best, borderline. But the IP felt that the area was workable for stalls and spins.

The CO also required pilots who anticipated IMC in the flight to get a weather briefing. There would be no flights in the local area if the terminal-area weather included ceilings under 500 feet and/or one mile visibility. At launch time, terminal-area conditions were 200 feet and one mile in light drizzle and fog. The instructor did not get the required briefing; since the weather in the work area was workable, he apparently felt he could go. He and the student hurried out to their aircraft to get into the air before the weather got worse.

Flying out to the offshore training area, the two aviators noted that the weather was, in fact, deteriorating, with a scattered layer at 1,000 feet, and down to 200 feet in some places. The instructor decided to demonstrate two spins and have his student complete his session so that they could recover before they lost their required ground references. They could thus complete the hop and get the "X."

The IP did his two spins, followed by the student's first try. According to the student, the spin was normal, but after he pushed the stick forward, the nose-down attitude and abruptness of recovery surprised him. Shortly after recovery, he felt a rush of wind and heard a lot of noise in the cockpit. When he turned to look at the rear cockpit, he found it empty.

The IP had been thrown from the aircraft because, when the student pulled his stick back to enter the spin, the instructor's stick had probably hit his buckle and released his harness. Under the negative-G condition of the student's aggressive spin recovery — increased when he rammed the stick forward — the lieutenant became a projectile, fired through his canopy.

The student recovered from the spin at 6,800 feet. He believed that there was something wrong with the aircraft since his instructor had bailed out. At this point in his training, he was a day, VFR pilot with barely 17 hours. Everywhere he looked he saw clouds over the available airports. He felt that his best course was to abandon the T-34, so he bailed out.

Meanwhile, the IP descended under a good chute. He was sufficiently clear-headed to use his survival radio and to call out his position as he descended toward the water. Both crewmen had recently gone through water-survival courses, although the IP had not done the open-water parachute descent training, which is only required for aircrew flying ejection-seat aircraft. His friends said that he admitted feeling unsure of his ability to take care of himself in the water.

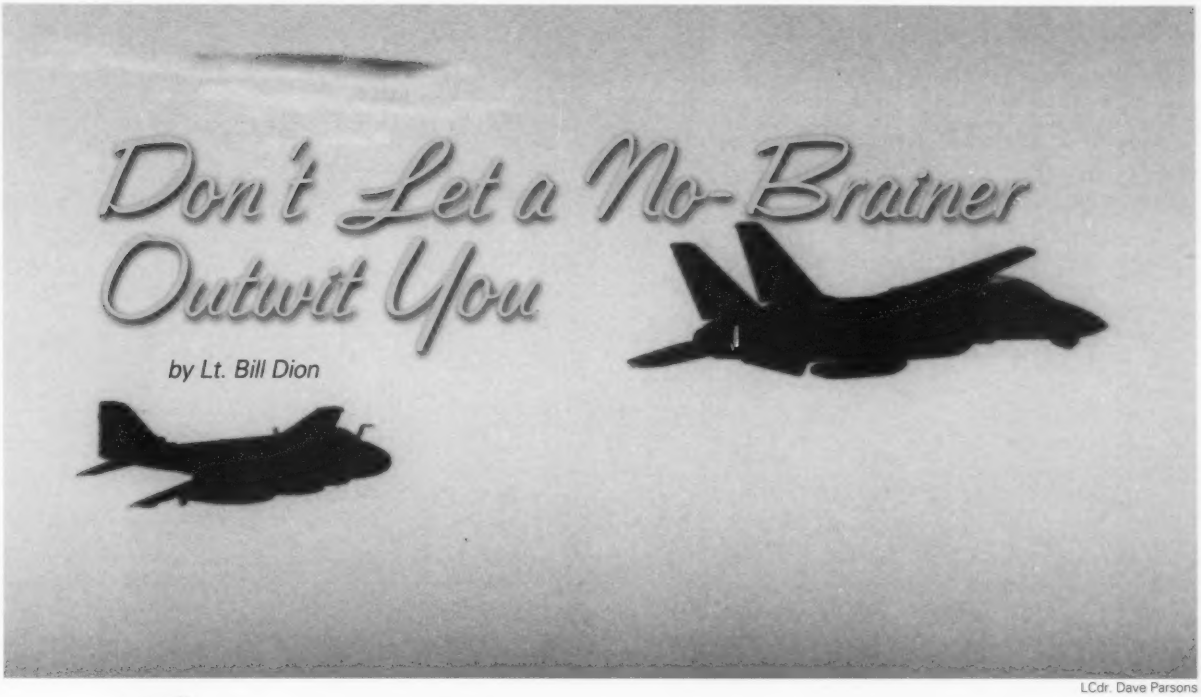
The IP's concern about his abilities in the water might have prompted him to wrongly estimate his height above the surface. Or he may have fallen out of his harness. For whatever reason, nothing more was heard from him, and his body was later recovered free of the parachute. His injuries indicated that he had fallen from at least 250 feet.

We talk about whether to report an individual aviator's actions to the skipper. In cases where a pilot or crewman who constantly goes against common sense or SOPs, but whose friends let him slide by without reporting him, we have no one to blame but ourselves. The same is true — and is perhaps even less excusable — for not reporting problems with inanimate, impersonal pieces of equipment.◄

Ten years ago, many of us IPs experienced this problem with our harnesses. But when we discovered a buckle unfastened, we merely rebuckled it and went on with the hop. We ignored the implications and didn't know about safety reporting strategies. We often discussed the problem, but we didn't do anything about it. We all live with our consciences, and I feel a little guilty about this tragedy. Moral? Report everything! It's still going on. Recently, a hazrep described a T-34 crewman who hit his head on the canopy when his harness became unfastened.—LCdr. Dave Morton, T-34C analyst, Naval Safety Center.

Don't Let a No-Brainer Outwit You

by Lt. Bill Dion



LCdr. Dave Parsons

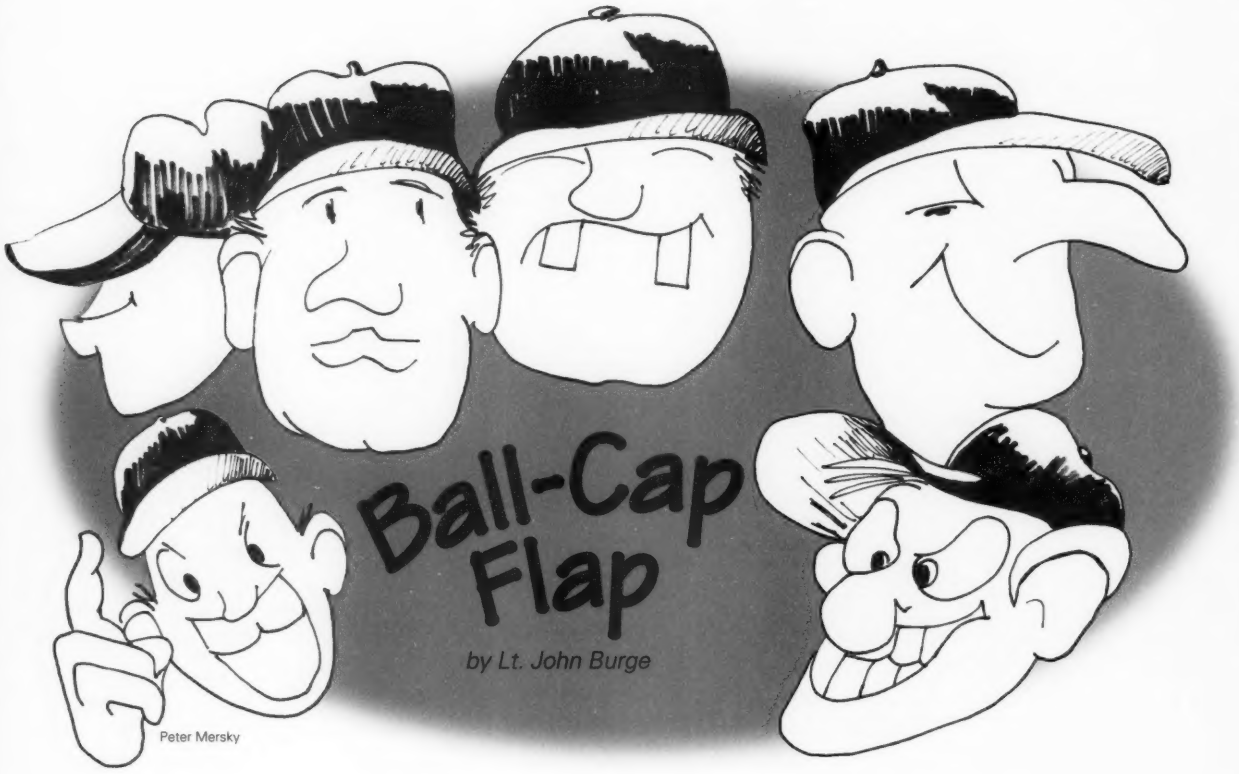
"There can be no more of a no-brainer than FCLPs," I heard a squadronmate say shortly after a five-minute brief of his upcoming night bounce. We were preparing for yet another at-sea period during the turnaround training cycle. Because it was the beginning of the cycle, and I was a relatively new LSO, I was inclined to agree with this well-respected, salty pilot. After all, the mission couldn't be simpler.

Fifteen months of controlling aircraft at our outlying field has taught me another lesson. No mission breeds such a casual atmosphere in such a potentially hostile environment as FLCPs. Despite appearances to the contrary, FCLPs can be quite dangerous. Consider these facts.

— Nowhere else do we operate in such close proximity to other aircraft in uncontrolled airspace, except in the ship Case I pattern, where there is at least 1,000 feet separation between aircraft, and then, only day VFR.
— Nowhere else do we aircrew place so much emphasis on getting the "X." We are willing to push weather minimums when the alternative is to bounce the next night.
— Nowhere else do we operate for the entire hop so low to the ground, at such slow speeds, and for most of the flight, outside the ejection envelope.
— Nowhere are you more likely to take a less than FMC jet.
— No time are you more likely to return with an emergency only to find your home base saturated with other squadrons' aircraft doing FCLPs, making Approach slow or unable to react to inbound aircraft with emergencies.

Having now experienced all of the above, I would tell my now salty civilian friend that while the mission is mundane, the threat remains high. We must stick to briefed weather minimums even if that means another night bounce. Go-no-go criteria and midair avoidance should always be high priorities. Brief a bounce hop as you would any other flight.◄

Lt. Dion flies with VA-95.



"You have an hour-and-a-half to get home, change, pack, then get your orders, and get on a plane. Can you do it?" asked the Ops O.

"Do I have a choice?" I thought as my head bobbed up and down, and I stared at the clock.

We had a plane stuck at a USAF base, after the plane severely FODed an engine on its way home from an air show. Compressor stalls had forced the aircrew to divert over western Texas. Upon inspection, the engine stared back at the aircrew with a toothless grin. It had major FOD damage to several stages of the compressor section.

I was on my way as the FCF pilot. The maintenance crew was ready for an aircraft-cavity check the next day, then if things went well, an FCF and flight home the following day (Saturday) or Sunday at the latest. This was the weekend before Thanksgiving, and we all wanted to be home for the holiday.

I arrived at the AFB, a combined civil-military field, Thursday night and was well-rested for the festivities the following day. We had to find a FOD-free area to turn the starboard engine to check the port cavity for leaks. The transient lineworkers came out and towed us out to a decent area. A little jockeying of the aircraft placed the starboard intake directly over a solid piece of concrete.

The BN and I crawled around and scoured the area for loose FOD. The last thing we wanted to do was FOD the starboard motor. At the same time, our alert maintenance crew asked the transient crew about the baseball caps they were wearing.

"We are required to wear these by the contractor," was the reply.

"Can you just let us do our own thing and stand well clear then? We don't want to FOD an engine."

"Not a problem. Let us know when you want to be towed back into the hangar."

"Great, those transient guys are really being helpful," I thought.

The cavity check was 4.0. The line crew towed us back to the hangar, and work progressed. Unfortunately, several unforeseen circumstances came up, and we couldn't do the FCF on Saturday or Sunday. That was OK. Good Air Force chow and TAD in a univer-

sity town would keep us happy.

Monday, we awoke to chilly, clear skies. A tow to the transient line, a quick low-power and high-power, airborne for an FCF, then home for Thanksgiving. It was a nice town, but four-and-a-half days were enough and my BN, who was pushing nine days here, was more than ready to leave.

We got to the transient line and did a thorough FOD walkdown. We even got help from the great transient crew. But the low-power turn disclosed an oil leak on top of the port engine. The engine would have to be dropped in order to reach it. It looked like spending another night. I sure wished I was going home.

Tuesday brought a new day and another attempt at the flight. The engine was back in, and we were once again on the transient line looking for FOD. With an early afternoon low-power that checked out, we taxied for our high-power and FCF. I started thinking about all the civilian traffic that shared the same taxiways and runways. The high-power throttle match was perfect. We were off for our FCF. Almost home!

The FCF went 4.0. I hoped we had time to get serviced by the helpful transient line before they hang up their ball caps for the night. Yes, all serviced and ready to go! We would be home for Thanksgiving.

As we turned up to fly home, the TC-4C arrived to take our wonderful maintenance crew home. We taxied out, and as we finished our takeoff checks, I looked at a civilian plane in the hold-short. In the back of my mind I saw bolts falling off of it and bouncing all over the asphalt. I shook the vision from my mind.

"No bad thoughts," I muttered, "I would hate to FOD an engine now!" We taxied onto the runway and ran'em up.

"Noo-ooo!" I shouted.

"What's wrong?" my BN cried.

"We are only getting 87 percent from the starboard engine!"

"Why?"

"I have no idea!"

The thought of going anyway flashed into my mind and stayed longer than I care to admit.

"I'll try it again," I said.

Three times and nothing over 87 percent. We taxied back to the transient line. I hoped we could catch our maintenance crew to let them know, "We're back!"

We could feel the eyes of Tower, Ground, and Base Ops on us as if to say, "I can't believe they haven't left yet."

The transient crew signaled for us to park where we had just left. As we stopped, there were three transient guys pinning gear, chocking us, and pulling our ladders down. Just then, our dejected maintenance team showed up. The AD1 climbed up to ask about our problem. I thought he was going to faint when I mentioned the starboard engine.

"Sounds like a fuel-flow meter problem," he sighed. "I'll take a look."

Just then out of the corner of his eye he saw movement very close to the port intake. As he leaned back to see what it was, we heard a "ka-chunk!" from within the port engine. I was now able to see one of the helpful transient men standing within inches of the intake. When I looked down I heard the words, "ball cap," and immediately had a mental picture of what had just occurred. The helpful transient guy had just lost his cap down the intake of a brand new engine! I was very glad I was still strapped in.

After I cooled down and inspected the engines, I found the same toothless grin that my squadronmates had seen 10 days earlier. Only now a ball cap was wedged there.

The only good thing to come out of this is that we all headed home for Thanksgiving on a TC-4C. The next day the transient-line guys were still very helpful and still had their ball caps on, even the guy who'd lost his down my intake the night before. I could only shake my head.

As we got off the TC-4C at another AFB for fuel, I had severe flashbacks as a transient-line guy wearing a baseball cap walked up, smiled, and offered us a ride to base ops. I just wondered how expensive that ball cap would be someday. ◄

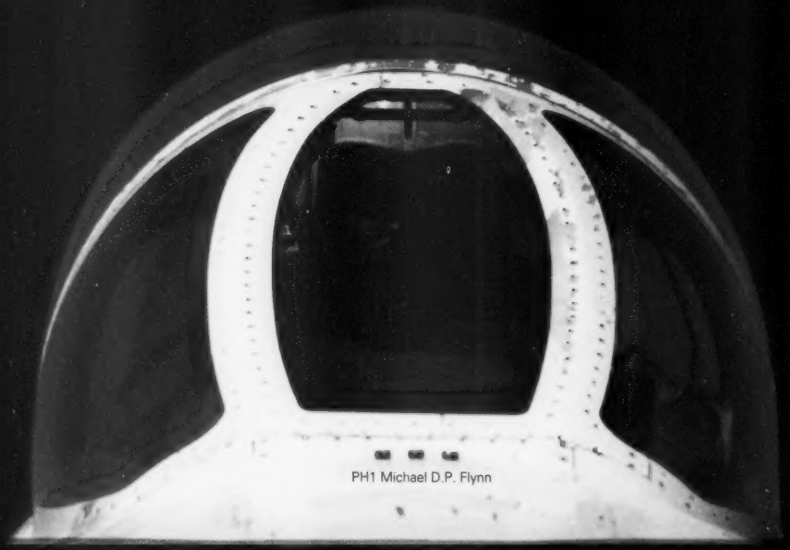
Lt. Burge flies with VA-196.

Our alert maintenance crew asked the transient crew about the baseball caps they were wearing. "We are required to wear these by the contractor," was the reply.

"Hey! I've Got a Fire Back Here!"

by Lt. Brent Berarducci

The moment of truth had come; I had to shut off the emergency generator and fly a 30-ton fighter at night with a flashlight and a standby gyro...



PH1 Michael D.P. Flynn

It was well past the midpoint of the cruise, and the flying was starting to pick up as we began another joint exercise in the Western Pacific. We prepared for a night AIC hop, our second flight of the day. The main objective was to maintain night currency. The following day we were going to NAF Kadena for a good deal: an air-wing strike-DACT detachment. We were going to hurl tons of live ordnance at some unsuspecting island and fight our Air Force brethren off-target.

After launch, we headed for our CAP station. We leveled off above the clouds at 22,000 feet and checked in with the E-2. Halfway through the first turn on CAP, waiting for our lead, the horizontal-situation display (HSD) started flickering and my RIO said that the tactical information display (TID) was doing the same.

The next thing I heard was, "I've got a fire back here!" Flames were coming from the right side of the TID from behind the rear-cockpit instrument panel into the RIO's cockpit. I immediately shut off both generators. With no unusual control inputs, I decided to leave the stability augmentation system (SAS) switches engaged and corresponding circuit breakers in. I immediately turned back to the ship.

I hurriedly asked if the fire was out, and my RIO came back with a resounding "No!" The moment of truth had come; I had to shut off the emergency generator and fly a 30-ton fighter at night with a flashlight and a standby gyro that was good for less than 10 minutes.

With the emergency generator off, the cockpit got dark in a hurry, but my standard Navy flashlight was getting me by. I turned around and shouted to my RIO over the noisy ECS and asked if the fire was out. Again, he shouted back, "No!" The Tomcat may be the fastest aircraft in the fleet, but you can't outrun a fire in the cockpit. I started getting a sizeable lump in my throat from thinking about the next inevitable step when my RIO shouted, "Hey, I think it is going out."

The wire-bundle insulation continued to smolder, but soon all traces of the fire had gone out. We waited another 30 seconds and brought the emergency generator back on-line. The fire remained out, the instrument lighting was restored, and my RIO was already on the radio to marshal declaring an emergency. I secured the ECS, dumped the cabin pressure, and selected RAM air to clear the smoke and fumes out of the cockpit.

My first priority was to get back on deck ASAP. I started descending and turned the dump on to get down to max trap. We inserted the marshal frequency into the front radio in case the emergency generator dropped to the low mode. The recovery was just concluding, and the controllers did an outstanding job vectoring us to final bearing.

With the initial adrenaline rush wearing off, it was time to concentrate on good basic aviating and crew coordination. I had to fly the best pass I could with manual throttles, minimal instrument lighting, and only an approach light for the LSOs to see.

At one mile, we were on-and-on and into the home stretch. The ball started rising in the middle, and I wrestled with the throttles to pull off the appropriate amount of power. Paddles quickly responded, "Deck's going down, power." Great, the deck was pitching! I started shoving the throttles forward as the deck came back up to meet us for an OK 2-wire pass. When we rolled out, the jet was surrounded by the crash-and-salvage crew throwing chocks under the gear and giving us the shutdown signal. I did not have to see that signal twice; the throttles were off and the seats immediately safed.

From the time I heard "I've got a fire back here!" until I brought the emergency generator back on-line seemed like 20 minutes. But the entire episode probably lasted less than one minute. Time compression can be the enemy of a well-trained aircrew. The subsequent maintenance inspection revealed a burnt circuit card in the TID and two melted wire bundles on the right side of the TID.

How many times have you growled about having to do the standard boldface and participate in the mini safety standdown the first day out of port? How many times have the phrases "Let's get back to basics" or "We need to stay focused" been thrown around? Thorough NATOPS checks and an aggressive safety-NATOPS program are godsends when it is dark, you are on fire, and there is a pitching deck waiting for you.◄

Lt. Berarducci flew with VF-111. He now flies with VF-213.

More Than Just a Generator Failure

by Lt. Eric Kost

While on a weapons det to El Centro as an A-4 student, I was scheduled for a low-level mission. I briefed the flight, including the route and the primary emergency diverts, with TACAN channels, pertinent frequencies, and divert headings.

After launching from El Centro, we turned east and headed for point Alpha at medium altitude. The route took us to a point about 30 miles north of Yuma, then turned north toward Blythe.

As we neared Yuma, we lost all electrical power, which meant the generator had failed. I deployed the RAT in accordance with NATOPS, to restore electrical power. At this point, there was some debate between me and the instructor on whether to turn around and fly the 80 miles back to El Centro, which was what we really wanted to do, or fly to Yuma, 30 miles away and within visual range. We decided to play it safe and divert to Yuma, declaring an emergency and setting up for a straight-in approach.

After landing, we lost electrical power while decelerating through 50 knots because of insufficient airflow through the RAT. As we taxied to the transient ramp, we noticed some curious stares from the emergency crews standing by, but it was not apparent to them until we shut down that this had been more than just a normal generator failure.

On shutdown, we could clearly hear the sound of metal on metal. As we climbed out, the onlookers could see that the entire back of the aircraft was covered in oil. Later, as mechs inspected the jet, they discovered that No. 4 bearing had failed and caused the CSD to shear, resulting in the generator loss.

If we had decided to fly back to El Centro, the engine would probably have failed, and we would have had to eject.

We were both lulled into thinking that it was a simple generator failure by hours of simulator training, where a loss of power was always nothing more than that. The only emphasis was on how to deal with IFR issues. With a clear VFR day, the emergency seemed less severe. We made the safe and correct call by sticking to the divert brief and heading to Yuma.

Lt. Kost flies with VF-31.

Lessons Learned

The Easy Way

by Cdr. Bob Coyle

There are two ways to get smart. One way is through actual experience — we call that "the hard way." The other way is to learn from others' experiences. The second method is much easier on our machines and bodies. This column describes some of the lessons that aviators have recently learned. During the last five years, four out of five mishaps directly relate to human error. These mishaps generate lessons that apply across the board.

"Watch that Last Step!"

On a clear, dark night with a mild sea state, an experienced Marine fell to his death. The ship was at anchor and flight ops were secured for the evening. Two avionicsmen were assigned routine maintenance on the cargo hooks of a CH-53E, which was folded and parked, ramp extended, over the deck edge. The cargo ramp was open to allow for securing the main rotorblades using the ramp's cargo-tiedown rings.

Although everyone (including both avionicsmen) knew that the ramp extended past the deck edge, the helo was not repositioned before they started their maintenance because they would be working mid-cabin and enter through the side aircrew door.

They entered the helo and started to work. Both wore Mk-1 life vests and cranials. While one was kneeling over the cargo-hook access panel, facing forward, the other avionicsman went aft toward the ramp. We don't know why he went aft. He apparently slipped and fell overboard. Despite an intensive SAR effort, he was lost at sea.

Lessons Learned:

1. The avionicsman was too comfortable in a hazardous environment.
2. The squadron's practice of doing maintenance inside an aircraft parked with ramp open and over the water was unsafe. Changes to the CV NATOPS, LHA NATOPS, and NWP-42 are being submitted to ensure any helo parked with the ramp tail-over-water has the ramp closed.
3. Personal protective equipment was also a factor in this mishap. The Sailor's Mk-1 vest was not equipped with a water-activated auto-inflater. OPNAV is coordinating with the TYCOMS to standardize requirements for use and to fund auto inflaters for all flight-deck personnel, including embarked air wings.

Not Quite Jim Carrey or Tom Cruise

This mishap would crack most of us up if it was Charlie Sheen and Lloyd Bridges on video. Unfortunately it was real life, real Navy. Fortunately, these people lived through the experience.

An instructor-under-training (IUT) was practicing formation training. At the time of the mishap, the IUT was Dash 2. The instructor pilot (IP) in Dash 1 throttled back to induce an underrun. The fleet-experienced IUT adjusted for the lower airspeed and joined up on the inside of the turn. For some reason, the IUT took umbrage over this routine maneuver. After transmitting strong objections, he did his first-ever canopy roll, much to the surprise of the IP. Despite all his intensive study of the "Maverick and Goose" flight training guide, he couldn't pull it off. He hit Dash 1, six inches from Dash 1's cockpit. Both aircraft were able to safely divert to a commercial airport close to the MOA.

Lessons Learned:

1. Remember the old maxim, "It's better to be dead than look bad?" There are still some people out there who take it seriously. Those wings you wear are a sign of great achievement. Don't betray them.
2. New buzz phrase: risk management. The IUT should have asked himself, "Gee, what might happen if I try this maneuver? What are the hazards? What are the possible benefits? Does it fit the mission?" This is risk management in a nutshell. We see more and more mishaps where the chain of events could have been broken by application of RM.
3. Aircrew coordination. Somebody has to be in charge, and we all have to be working toward the same goal. When we lose aircrew coordination, a mishap is lurking right around the corner.

Cdr. Coyle is Head of the Naval Safety Center's Aircraft Operations Division.

We Never Use Those Thunderstorm Lights

by Lt. Paul D. Bunge

The replacement pilot and I briefed the night-bounce period as we had every other hop for the past week. VFR departure to the OLF, a mere 10 miles away, bounce, and then back for an ACLS to a full stop. We spent a bit of extra time on the weather. After a beautiful summer, the weather had skipped right past fall and into winter, dumping lots of snow up in the mountains to the east. It meant the rain returned, once a day, whether we needed it or not. It was supposed to rain at man-up time, but the ceilings were expected to be above 3,000 feet with good visibility for the VFR flight. Fortunately, the rain came a bit early and had moved on to the foothills about 10 miles east of the field by the time we walked.

As we started our preflight, I noticed that the PC had left the cockpit's white thunderstorm lights on after he'd done his turnaround. I asked him to turn them off.

"Aircrew never use those lights," I told him. "They just wreck our night vision."

After takeoff, we headed south to the OLF for the bounce. I noticed that the rain clouds had parked themselves over

Illustration by John W. Williams

the foothills to the east, but both the field and the OLF had at least 3,000-foot ceilings and seven miles visibility with nothing threatening from the west.

The bounce went well, and before our last pass, the LSO told us that runway 25 was now the active, requiring an approach from the east, which meant vectors through the rain for the ACLS approach. No big deal. Intruders are supposed to fly all-weather, and a little actual instrument time never hurt.

We leveled off at 3,000 feet on downwind, and I checked the radar for any thunderstorm cells ahead of us. Everything looked OK. As we approached the clouds, the replacement pilot and I saw a basketball-sized, blue ball of St. Elmo's fire form around the tip of the refueling probe. St. Elmo's fire is nothing unusual, though it normally forms a web of sparks on the windscreen rather than on the probe. We were also at 250 knots, slower than when the fire usually forms. Although we agreed that the blue ball looked pretty darn neat, neither of us thought too much of it. The ball dissipated after 30 seconds.

We pressed on, getting hooked in at about 11 miles behind other aircraft. As we dirtied up and descended on base leg, still IMC, the blue ball came back on the tip of the probe. This time, it quickly grew to about three feet in diameter with large blue sparks coming from it. Both of us were way too impressed with the light show outside the window to wonder why our airplane was acting like some static ball in a mad scientist's lab.

We were both focused right on the probe when ka-boom! A blue-white bolt of lighting hit us. We were completely blinded, and I was shocked through the computer pedestal. After several seconds and a few expletives, I was finally able to see the ADI, which showed 80 degrees right bank. My heart skipped a couple of beats as I reached for the handle while struggling to see the VGI. It was still level.

I quickly called for the pilot to get on the VGI. He said he was on it. As the other instruments came into view, I relaxed a bit as they all showed we were still in controlled flight. I still couldn't see very well and found the attitude reference switch by feel before securing the system to get rid of all the flashing warning lights. We completed the approach and landed.

No other airplanes had any problems with St. Elmo's fire that night. I have no idea why our airplane developed such a large static charge in such a short time. However, I did learn a couple of important lessons. If you're in an airplane that starts shooting off big blue sparks, don't stare at them. Second, the NCLT we use for CQ training hasn't kept up with A-6 cockpit mods, and the attitude reference switch is in a different position.

I initially reached for the switch in the wrong place when I really needed to get to it. It caused a delay of only a second or so, but that would've been a long time if my pilot hadn't alertly shifted his scan to the VGI rather than chase the bad attitude on the ADI, the primary attitude reference. At 1,800 feet and 160 knots, we wouldn't have had very much room to recover.

Are your simulators configured even slightly differently than your airplane?

Oh yeah, those thunderstorm lights — we never thought of turning them on. They wreck your night vision, you know.◀

Lt. Bunge is an instructor BN with VA-128.

We were both focused right on the probe when ka-boom! A blue-white bolt of lightning hit us.

I Don't Know This Field

by Lt. Robert Lawrence

We were off the coast of Southern California, on a cool, dark morning not unlike any other for the past few weeks on board USS *Abraham Lincoln*. This morning, however, would stand out for some time to come. The strike was simple enough, an echelon of aircraft streams through the target area to simulate bombing through an overcast — yes, radar bombing, but we never get there.

In the rendezvous stack, my wingman was nowhere in sight. Finally, we joined on another section of aircraft to solve the question of the missing airplane, only he was NORDO with a HEFOE signal of two – indicating an electrical problem. All exterior lights were illuminating well enough, his hook was down (night-vision goggles are great) and his nose position was such that we were heading to the beach. NAS North Island was the closest divert, and at 0430 in the morning it was the only one that was open.

The penetration went just as briefed: dirty up on top of the cloud deck, section half-flap approach to a stabilized ball at a mile-and-a-half. I dropped him off, and was on my own.

I could picture it — boom, in for an uneventful 1-wire. What a hero! What a moment to savor. The story should end here, but… I simply exited the pattern via a right turn to the south out over the bay for a left teardrop approach to the intersecting runway. Gear, flaps, anti-skid, everything looked great, a little heavy on the fuel, but this is the field. The ball was even centered on touchdown, something that never seems to work out at the ship.

Initially, the jet slowed as expected. The brakes felt good. Yet, when the airspeed indicator held steady at 48 knots, it really held steady. At 0430 in the morning it is still dark, and being at an unfamiliar field just adds to the uncertainty. After three weeks on the boat you start to lose the feel of a normal deceleration. To make matters worse, my home field's runway is 12,000 feet, not the 7,200 feet that I was on now. Four thousand feet of runway had just passed, and only 3,000 feet remained. I selected emergency brakes, dropped the hook, and still nothing worked. I even thought about opening the canopy and dragging my feet, but that wouldn't have helped. The aircraft continued to slow but would not stop before the end of the runway.

Creeping past the overrun, the jet went out about one plane length, then sunk six inches in the sand. Hold that charlie time, it's going to be a few hours taxi time from here.

Well, emergency brakes and anti-skid are great tools, but why didn't I just add power and let the plane do what it does best? Because of the way in which the problem manifested itself.

The indications are so subtle at night that before you realize the problem and troubleshoot the predicament on the runway, you may be out of concrete. There are several decision points that a pilot must go through when landing an aircraft, especially at an unfamiliar field. The most natural one is the familiar deceleration of the aircraft, accompanied by the feel of the brakes and the speed at which the runway markers go past. We all know these inputs and generally do not even bother to think about them. But does it feel the same when we have carrier-pressurized tires? Why not have a final checkpoint, a go-around distance, like the A-7 pilots used? Depending on your

I could picture it... boom, in for an uneventful 1-wire. What a hero!

aircraft's performance, 2,500 feet or more from the end of the runway might be where you can still add power and fly away.

Also, update yourself on the divert fields. Yes, we always review their position while we are on the boat, but do we consider the field layout? How long are all the runways, not just the one that we are taking our wingman into? What about the landing light? Some people do not like to use it because it destroys your night vision. At least you can use the light to see everything in front of you, like the arresting gear pennant that you may have just passed up.

It all boils down to this: when you are on an emergency divert, the emergency is not over until you have shut down your engines. Whether you are the aircraft in distress or the lead, you need to be ready for anything and review all of your options. Never assume it is just another field landing.➤

Lt. Lawrence flies with VFA-22.

Takeoff roll with zero knots, full afterburner, and typical landing weights will normally be less than 1,600 feet. Afterburner ignition and acceleration time is negligible below 2,000 feet, which means that the distance for takeoff or go-around will be even shorter with any groundspeed.—LCdr. Tom Ganse, Naval Safety Center FA-18 analyst.

Focus! Focus!

by LCdr. Mark. W. Darrah

When I reported to my first squadron as a nugget Cat 1, my CO sat me down and welcomed me to the fleet. He told me many things, but one point has stuck with me throughout my career: I should spend as much time as possible in the squadron ready room. Of course, I had no clue at the time why he thought it was so important to hang out there. It took about half of my first tour before I realized that my squadron-mates spent most of *their* time in the ready room telling sea stories.

These weren't the sea stories I heard in the O Club; they were stories about close calls or unusual situations when flying around the boat or on cross-countries. I'm not a rocket scientist, but even I figured out that their sea stories could help me avoid making similar mistakes. Many of them involve situations that don't have clear-cut NATOPS solutions. These sea stories usually develop into in-depth discussions about aircraft systems, NATOPS procedures and most importantly, alternative courses of action.

I would guess that several NATOPS change proposals have resulted from these ready-room discussions. I hope my sea story will start valuable discussions in your ready room.

The mission was a section flight involving tanking in a local op-area, followed by section work. The weather in the op-area was marginal, so we coordinated with the tanker to meet on a local TACAN radial at a VFR altitude. Weather outside the area was VMC, with unlimited visibility.

As our section reached the tanking track, our entire crew began looking for the tanker. I was seated in ECMO 3 (aft left seat) and had reached across my body to grab the canopy bow handle, pulling myself around to gain a better view aft of the wing line. The aircraft was level at 300 KIAS. I felt a shudder through my ejection seat, followed immediately by a loud metallic clanking noise behind my right side. I fell forward.

I pushed myself back against the ejection seat by pushing away from the instrument panel. I assumed the position for ejection and waited for what seemed like several minutes. I told the crew that we needed to knock off the flight and return to base immediately. I checked around and found that the upper retraction lanyards had completely disconnected from my koch fitting reels, and the emergency restraint release handle was completely stowed.

I became concerned because I thought I had experienced a partial ejection. I couldn't determine what portion of the sequence had been completed and didn't know if it would continue. If it continued, I was in a precarious position.

We were 15 minutes out, had detached from the section and turned for home. We discussed the situation and decided to safe all our ejection seats before landing. We completed an uneventful straight-in approach and taxied to the hot-brake area.

The ground crew lowered the boarding ladders, I got out, and an AME troubleshooter pinned my seat. The pilot taxied to the line and shut down.

Post-flight inspection revealed the entire seat-man-separation sequence had been completed because of a mechanical failure of the time-release assembly. It had partially fired (though no CAD was involved), and it had completely released me from my six restraints.

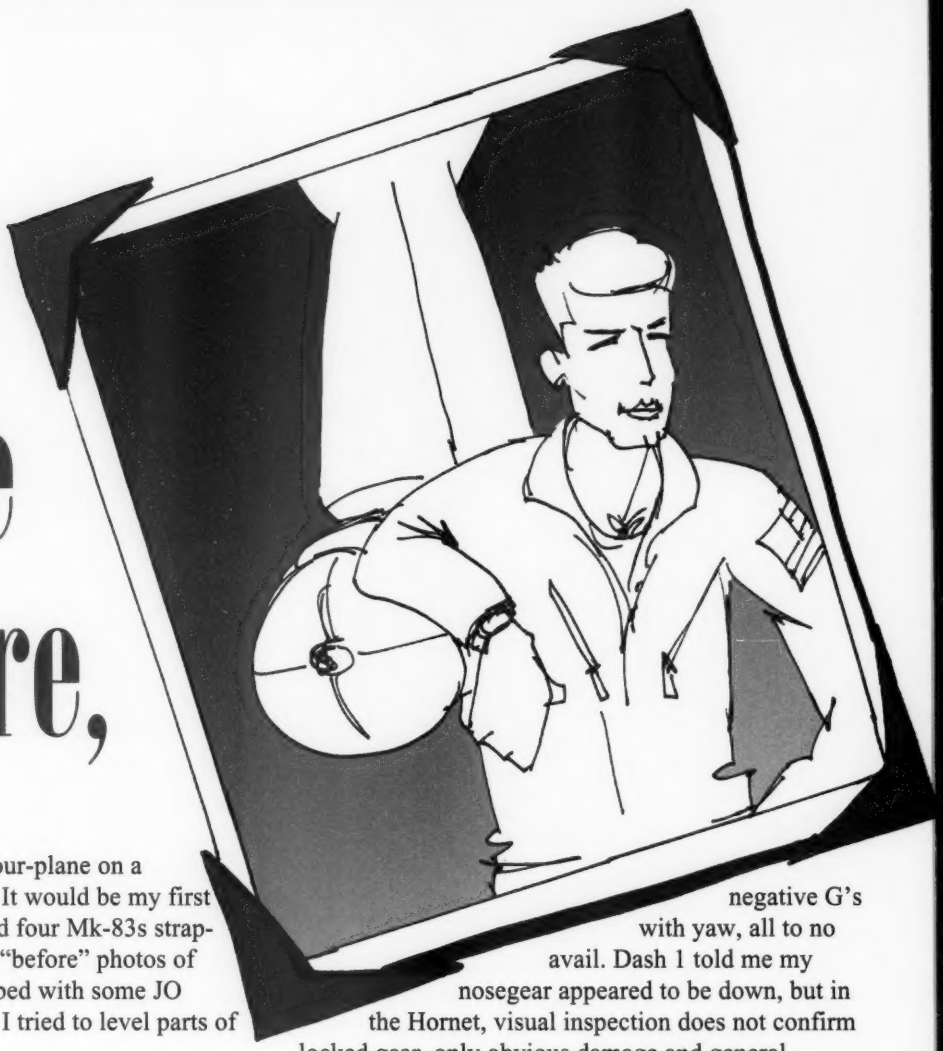
Those of you who fly with GRUEA-7 ejection seats know that there are no procedures or checklists to use in this situation. Talk with your squadronmates. Try to identify other situations that may have no clear-cut solutions or procedures.

How many times have we heard that aviation involves thousands of hours of boredom interrupted by seconds of sheer terror? Most of us have said it, or heard it, and laughed each time, but deep down we know that those few seconds usually refocus our attention. Believe me, I am now the squadron's expert on ejection seats, and my attention has been refocused.◀

LCdr. Darrah flies with VAQ-136.

I felt a shudder through my ejection seat, followed by a loud metallic clanking noise behind my right side. I fell forward.

This Is Me Before,



I launched as Dash 3 of a four-plane on a beautiful Fallon morning. It would be my first live-bomb drop; we all had four Mk-83s strapped to our Hornets. With the "before" photos of me next to my bombs (inscribed with some JO humor) safely in my camera, I tried to level parts of the Nevada desert.

Having expended our ordnance with the desert still intact, it was time for the off-target rendezvous. We felt huge and had our young fangs out for a sierra-hotel break. But our dreams were squashed when Fallon Approach told the flight to break up for practice PARs. So much for the victory parade.

On downwind, I dirtied up and immediately, my peaceful, easy feeling ended. I had an unsafe-nosegear indication, with a light in the gear handle and a landing-gear aural tone. I was fat on gas, the weather was great, it was a deferred emergency, and I was at the controls.

I told Tower I was going to delta overhead while I called base and had Dash 1 join on me. We did our challenge-and-response NATOPS sequence. We exhausted the checklist for unsafe landing gear, including blowing down the gear and positive and negative G's with yaw, all to no avail. Dash 1 told me my nosegear appeared to be down, but in the Hornet, visual inspection does not confirm locked gear, only obvious damage and general position of gear. The ODO, also an LSO, talked me through a minimum descent-rate landing and told me to keep the nose off as long as possible. Roger that, a typical USAF landing. I dumped down and began my approach.

As I got in-close, my descent rate was that of someone who doesn't fly at Fallon very often. It took a lot of power (read, a squirt of burner) to make it a minimum rate-of-descent landing, but the mains touched down like butter, and I kept full-aft stick to keep the nose off as long as possible. The Hornet decelerated nicely, and the nose started to fall through at about 90 knots.

Squee-e-eak! Down-and-locked! Add some salt to this young aviator. Meet me at the club. Drifting a little right here… need some left rudder. I said, "Need some left rudder." Oh, boy, no NWS-steering cue in

Peter Mersky

and This Is Me After

by Lt. Matt Buckley

the HUD. Out of runway and airspeed to take it around and I was heading quickly for the right edge of the runway.

Pull the emergency brakes and stay on the runway. Differential brakes. Here we go three-wheeling. Secure the engines, open the canopy, hop out.

Standing in the middle of the runway looking at the black skid marks veering off to the right and leading up to my jet, I had a lot of time to think. If I had only had a little more understanding of the landing-gear system I would have known that if the jet "thinks" the nosegear is up, it will not give you nosewheel steering. It does not matter if the nose gear is down-and-locked. The problem turned out to be a faulty downlock proximity switch.

The emergency procedure in this situation says "any gear not down-and-locked shall be treated as though it were up," and does not address what will happen if the nosegear is, in fact, down-and-locked.

Once my nose gear was on the deck, I assumed that it would be a normal landing rollout, but having safely made it through that emergency, I walked into a new one with no NWS. Only a thorough knowledge of systems could have prevented my little excursion by concentrating my efforts on staying on the runway. As it turned out, only the right main and nose rollers left the runway, and I didn't blow any tires. The aircraft was flying the next day.

With the "after" photos of me next to my sightly wounded chariot in my camera, I entered the ready room prepared for my beating. As I told my "there I was story" complete with hand puppets, I was greeted with several rounds of "Oh, really?" and lots of nodding heads. I felt better when a survey of the assembled salt yielded a surprising response. Like me, almost everyone assumed that you would still have your NWS. But, as they say, there's one in every crowd, and of course, someone knew otherwise. Thanks for telling me.

I learned that in-flight emergencies are not complete until you're in the chocks with the engines shut down, and that nothing can replace a good knowledge of your aircraft systems. Someone half-jokingly asked me if I had safed my seat when I hopped out of the jet. That's another story altogether.◀

Lt. Buckley flies with VFA-94.

by LCdr. Ken Skaggs

"Sport 209, three quarters of a mile, slightly above, slightly right, call the ball."

"209, Tomcat ball, seven point oh."

"Roger ball, 27 knots," the LSO calls. The deck begins to drop, so he adds, "Deck's down, you're on glideslope." After a slight pause, he says, "You're a little slow, so power back on."

"You're low, you're slow," the RIO contributes.

"I know," replies the pilot.

The deck stops pitching. The Tomcat drifts left, still displaying a green slow-chevron to the pilot and the LSOs. The Tomcat's true airspeed had decreased from 152 knots to 132 knots, then increased after the LSO's power back-on call. The Tomcat also begins to settle below the glidepath.

"Power," directs the LSO.

By the in-close position, the pilot has added power in response to the LSO and the RIO. The airplane is on glideslope with 145 knots of airspeed. For a brief moment the pilot is on glidepath and on-speed, but he still doesn't have lineup under control, and he doesn't have a good power setting. The airplane continues drifting from left to right.

The pilot begins concentrating on lineup, ignoring everything else. He drops the left wing to stop the drift. The LSOs can hear the big turbofan engines spooling down as the pilot retards the throttle. The LSO's HUD shows a 17-fps descent (1,020 fpm) as the wing-down, power-off combination drops the airplane toward the water.

"Power," the LSOs call, making their second power call in less than two seconds.

One of the LSOs has had enough, and he pushes the pickle switch. The waveoff lights come on as an LSO begins chanting "Wave off, wave off, wave off!"

The canopy is still on when the aircraft falls below the flight deck.

The engines begin spooling up, but it's too late. The Tomcat is only 500 feet from touching down, wings level, with the sink rate increasing to 1,320 fpm. The aircraft has again decelerated to 132 knots.

The Tomcat hits the rounddown between its intakes and mainmounts, four feet left of centerline in a slightly nose-high attitude, destroying the aircraft aft of its wings. Estimates place the impact force at approximately 23 G's, enough to daze and disorient the RIO. With his helmet blocking his eyes, he asks, "Do you want to eject?" The impact crushed the generators, so the ICS doesn't work. The pilot never answers.

The Tomcat pitches forward and skids down the flight deck. The aft section of the aircraft hits the flight deck and begins to spin left, as flames engulf the forward section.

As the forward section travels up the flight deck, it settles back down into a normal attitude and begins to spin left. It continues spinning left through nearly 270 degrees before flying off the angle deck. The canopy is still on when the aircraft falls below the flight deck.

"Ninety-nine delta," Approach advises on the radio.

As the aircraft hits the water, or shortly thereafter, the pilot pulls an ejection handle. The RIO survives, the pilot does not.

What happened?

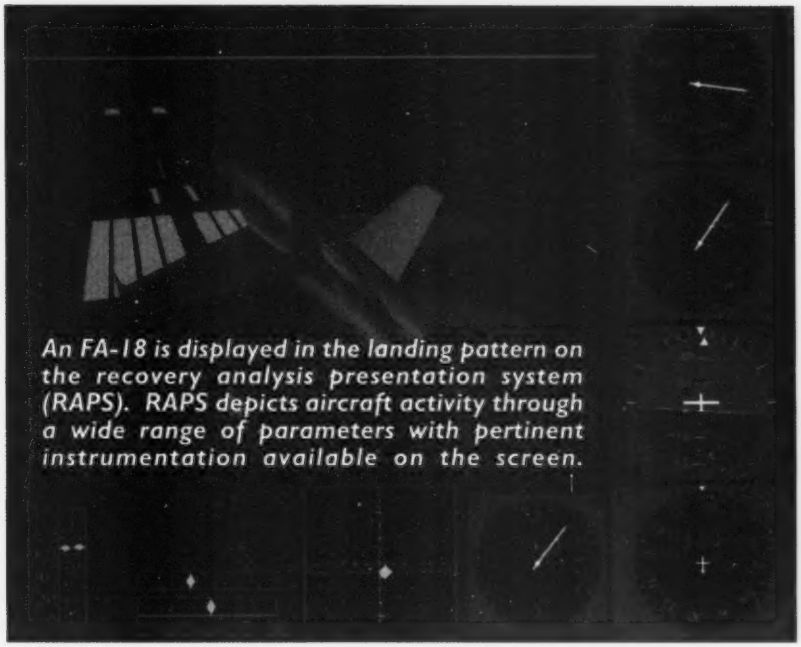
As in all investigations, many different possibilities were examined and discussed. The obvious conclusion is that the pilot failed to correct a low, underpowered pass, even after being told to do so by both his RIO and the LSOs. He initially added power, then reduced it. This pilot had a reputation for a slow scan at the boat, and it appears that he fixated on lineup. This fixation made him devote too little time to glideslope and airspeed control.

The aircrew also ejected late — almost 10 seconds after initial impact. A Monday-morning quarterback could argue that they should have ejected immediately after hitting the ship, but remember, these guys had just slammed their 21-ton Tomcat into the steel rounddown at 110 knots. Not only that, they had lost all electrical power and communications. The problem is not the loss of electrical power or lack of ejection; it is pilot proficiency.

The pilot had only four night traps in the four months before the mishap, and only two in the previous four weeks. This lack of flight time occurred because the carrier needed to maintain a great circle route, with little regard for divert fields or weather. The pilot's below-average performance during previous line periods had led to him being put on a "restricted list" of night players, which put him in a catch-22 situation: he wasn't considered proficient enough to fly in all conditions, so he couldn't fly enough to get proficient.

The bottom line: there is a difference between currency and proficiency. The pilot met the minimums specified in NATOPs, so we could argue that he was current. The problem was that he was current, but was not proficient, and he should have been removed from flight status before the cruise.

Currency minimums are designed to keep the average pilot consistent behind the boat. Obviously, the minimums are not enough at times, which is why a CAG will generally be cautious with nuggets. At some point, usually after his first cruise, a pilot should be capable enough to fly at the minimums. If he can't, then the chain of command must decide if he has failed to develop into a capable and competent aviator.◀



An FA-18 is displayed in the landing pattern on the recovery analysis presentation system (RAPS). RAPS depicts aircraft activity through a wide range of parameters with pertinent instrumentation available on the screen.

Creating an Eye Witness

by Bud Baer

When investigating an aircraft mishap, you're lucky if you find an eye witness. Sometimes you do, but more often you don't. Mishap investigators at the Naval Safety Center use an advanced technology to give them something better than an eye witness. This was the case with a recent FA-18C mishap.

The Hornet pilot was practicing road reconnaissance in mountainous terrain and poor weather. Snow showers reduced visibility to less than a mile. The pilot separated from his lead. In a moderate climb, the aircraft struck a ridge at 429 knots, killing the pilot.

LtCol. Joe Rogish, USMC, head of the Center's Aircraft Mishap Investigation Division, investigated the crash. At the scene in two feet of snow, LtCol. Rogish and other investigators searched for the deployable flight incident recorder (DFIR). Used in late-model Hornets, the DFIR ejects on impact to escape destructive G forces and post-crash fire. Investigators found it buried in the snow four days later, intact. LtCol. Rogish returned the DFIR to the Safety Center.

Chip Brown, head of the Center's Data Retrieval and Analysis Division, took the unit to McDonnell Douglas in St. Louis, where the staff extracted the data. He then flew to the Transportation Safety Board (TSB) of Canada in Ottawa, where the staff translated the data for the recovery analysis presentation system (RAPS). TSB formatted five 3.5-inch diskettes for use in RAPS.

RAPS, the "witness maker," is the software for a Hewlett-Packard work station located at the Naval Safety Center that, among other sophisticated analysis functions, animates mishap data on a screen, recreating the aircraft flight profile before impact. What you see will make you feel you're actually a witness to the mishap.

"It tracks the flight by correlating data culled from digital flight recorders," Mr. Brown said. "It can also provide graphic presentations of the data and otherwise serve it up any way the investigator needs it."

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Design and layout: Laurinda Minke
For questions or comments, call Joe Casto at
(804) 444-7689 (DSN 564)

RAPS can show the sequence of events from a number of perspectives, such as from inside the cockpit or outside the aircraft. The animation also displays relevant instrument readings. You can move through a flight sequence in real time, then slow down or stop at a critical point and rewind or move to fast-forward.

For the FA-18 mishap, RAPS depicted aircraft activity through a wide range of parameters, such as pitch and roll, engine thrust, lateral and longitudinal acceleration, and other factors. Using this stored data, investigators can determine what aircraft systems were working at the time of the crash.

"Non-volatile memory recovered from a crashed aircraft can often save substantial amounts of money that would be required for salvage and engineering investigations," LtCol. Rogish said.

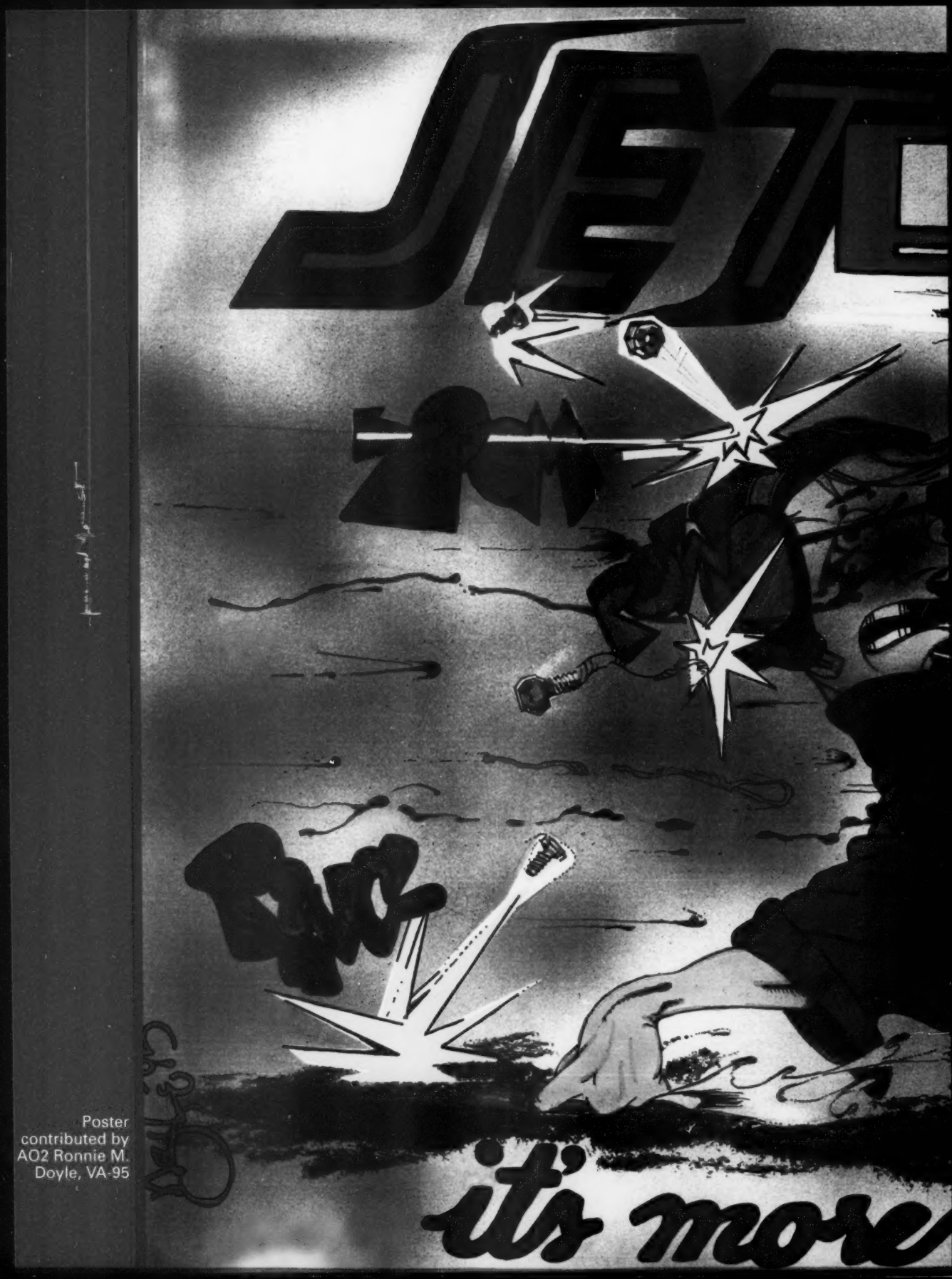
"In a real flight, many things happen simultaneously. To get the proper perspective for a mishap investigation, we need to display events as they occurred with the capability to slow or reverse events to study detail."

The TSB developed RAPS; it is licensed to the U.S. National Transportation Safety Board, the U.S. Air Force, and several allied governments, as well as the Navy.

"RAPS is extremely versatile and not limited to processing FA-18 crash data," according to Bill Gregory, Safety Center mishap investigator and assistant division head. "We have also used it to analyze pilot actions during aircraft departures."

"In the very near future, investigators will download flight data for Class B and Class C mishaps from the aircraft data storage units. They will process it through RAPS, giving the investigator another eye witness of what occurred, in addition to aircrew statements," Mr. Gregory said.

As other aircraft are equipped with digital and fly-by-wire technology, the Navy will become increasingly dependent on RAPS — for an eye witness.



Poster
contributed by
AO2 Ronnie M.
Doyle, VA-95

XHAUST...
clean air!

Class A Mishaps

The following Class A aviation mishaps occurred between 3 Oct-16 Nov 95.

Aircraft	Date	Command	Fatalities
HH-46D	10/3/95	HC-6	4
Helo flew into water during NVG SAR support.			
F-5E (2)	10/5/95	MAG-46 DET C	0
Midair collision during ACM; wingman recovered.			
FA-18D	10/5/95	VMFAT-101	0
Birdstrike on low-level navigation training flight.			
AV-8B	10/10/95	VMAT-203	0
Harrier crashed into water during air-to-air training.			
F-14A	10/11/95	VF-101	1
Ejection seat misfired during maintenance.			
UH-3H	11/1/95	PMRF Hawaiian	0
Helo dropped Mk-30 while transiting to forward flight.			
CH-53E	11/16/95	HMH-464	1
Crewman fell out of helo during navigation training flight.			

Milestones

Command	Date	Hours	Years
VAW-78	9/3/95	16,804	10
VFA-203	9/10/95	19,258	7
PACMISRANFAC	9/21/95	47,700	24
HS-7	9/26/95	16,700	3
HSL-51	10/3/95	23,000	4
HS-11	10/9/95	12,000	12
VP-9	10/27/95	107,800	17
NAS Barbers Pt.	11/3/95	7,050	9

Tear out this insert! Post this newsletter until it's old news, then flip it over as a poster.

Comparisons

	Class A Flight Mishap Rates FY95	FY94	Class A Mishaps FY95	FY94
Navy & Marine	2.16	1.78	34	28
Navy	1.87	1.68	22	20
Marine	3.04	2.08	12	8
CNAL	1.28	3.33	4	11
CNAP	3.99	1.09	14	4
MFLANT	3.69	3.96	5	5
MFPAC	3.18	1.61	6	3
TRACOM	0.92	0.97	3	3
NAVRES	0.69	0.73	1	1
4MAW	2.53	0.00	1	0
NAVAIR	0.00	2.68	0	1
Non-FMF	0.00	0.00	0	0
OPNAV	0.00	0.00	0	0

Mishap Forecast

	1995 Forecast	1995 Actual	1996 Forecast
FA-18	6	9	7
F-14	5	6	5
A-6 (less EA-6B)	2	1	1
AV-8	5	5	5
TA-4	1	0	1
H-46	3	1	2
H-1	3	3	3
T-2	2	0	1
H-60	1	3	3
H-53	3	0	2
H-3	1	0	1
T-34	1	2	1
EA-6B	1	0	1
S-3	0	1	0
T-45	1	0	0
Other	0	3	2
Total	**35**	**34**	**35**

The 35 projected FY96 mishaps are expected to include 20 with aircrew error and 15 with material malfunctions. Most probable aircrew errors are: • Aircrew coordination failure (10) • Violations of NATOPS/SOP (5) • Improper use of flight controls in the air (5) • Inadequate flight preparation (3). Among these are expected 5 CFIT and 3 Midairs.

My tale begins back when I was a fledgling aviator in VT-27 piercing holes in the south Texas sky. Toward the end of the fixed-wing syllabus, the cross-country flights were surely some of the most eventful and best learning experiences. I thought this one was a great deal — NAS Corpus Christi to Michigan for four days of the air show at Willow Run, free rental cars, the works!

The flight up was OK, although we had to spend the night in Louisiana because of weather. The air show itself was fantastic; the locals were most receptive toward military aviators. The flight back started off routinely until we crossed Ohio. Over the southern half of the state, my instructor told me his wet compass was starting to leak mercury. We diverted to Wright-Patterson AFB to see if we could get it repaired.

After a few hours (much longer than anticipated), we were ready to get on our way. We checked the weather and learned that thunderstorms were building up in the vicinity, but if we moved quickly they wouldn't be a problem.

While taxiing out, the instructor was having intermittent problems with his ICS and radio, but we wanted to avoid the storms and launched. As we flew in and out of the clouds, he decided to have mercy on me and not make me put up the canopy bag. While airborne, his calls were still intermittent, and he had deduced that the problem was his helmet.

Continuing to buzz along, I noticed two things. The ride wasn't getting any smoother, and the thunderstorms were building up a bit more quickly than we anticipated.

We got vectors. My instructor was still having comm problems, and the thunderstorms kept building. With my vast experience of about two hours actual instrument time, I had a sinking feeling in my stomach.

When my instructor lost all communications, he decided it was time to turn around.

"OK, you've got it!" he yelled back.

After choosing and briefing the approach, I received vectors for a non-precision approach back to Wright-Patterson. All my instructor could do was follow along on the approach plate. Everything went well, except for a little vertigo, and we broke out a few feet above MDA. Once in the clear, my instructor took the controls and landed.

We stayed overnight, he got his helmet fixed, and we flew back to Corpus the next day. I got an "above" for the flight, along with new respect for the phrase, "OK, you've got it," and for the consequences of launching into deteriorating weather with a communication problem.

Lt. Gibson flew with HM-12.

Voulez-Vous

by Lt. William C. Oldham

PH2 Charlo Whorton

It was the last night of a six-month deployment, just before we would leave the Med. The aircrew of Cutlass 463 was enjoying unrestricted ceiling and visibility on a clear night. Just after launching on our second mission of the night, we helped our ship recover an inflatable life raft. This operation required about 45 minutes of hovering without a visible horizon, using the searchlight, and carefully positioning the helo. I was at the controls; the aircrewman was using the crew-hover feature of the AFCS at the cabin rescue station to position the helo. Crew coordination was at a peak.

After the "raft rescue," we returned to our primary tasking. We were participating in a joint ASW exercise, searching for a German diesel submarine, and were eagerly awaiting submarine contact. Finally, our patience was rewarded: a radar contact suddenly went sinker. We were only 12 nautical miles from mother, and we wanted a kill on this sub before it could attack our ship. After prosecuting the sub, we broke contact to recover on time, which was 10 minutes after the break-off.

With mother in sight and landing checks complete, we started the standard VFR approach from 1.2 miles astern with approximately 50 minutes of fuel.

Inside one mile, the ship disappeared into the blackness, enveloped by fast-forming fog. We were soon flying IMC. I was still at the controls and still feeling the effects of the prolonged hovering. A bad case of vertigo set in.

I told the HAC (my det OINC), and we swapped control. We continued our approach on instruments, and waved off upon reaching minimums with no ship in sight. The aircrewman made the earliest call on the situation; he wanted to go to a nearby carrier. Our ship turned 180 degrees trying to clear the fog bank, but to no avail. We decided to try another approach. The HAC was concentrating on flying a perfect instrument approach while I backed him up on instruments and tried spotting the ship. My biggest concern was staying out of the water.

On our second approach, we got close enough to the ship to be heard by the deck crew, but we still could not see the ship and waved off a second time.

Now with less than a half-hour of fuel remaining, I really began to get concerned. We climbed through 400 feet where the fog cleared. Looking straight down, we could see the glow of the ship's lights and the smokes they were already throwing in the water as we flew over them. I thought we could make it in on a smoke-light approach.

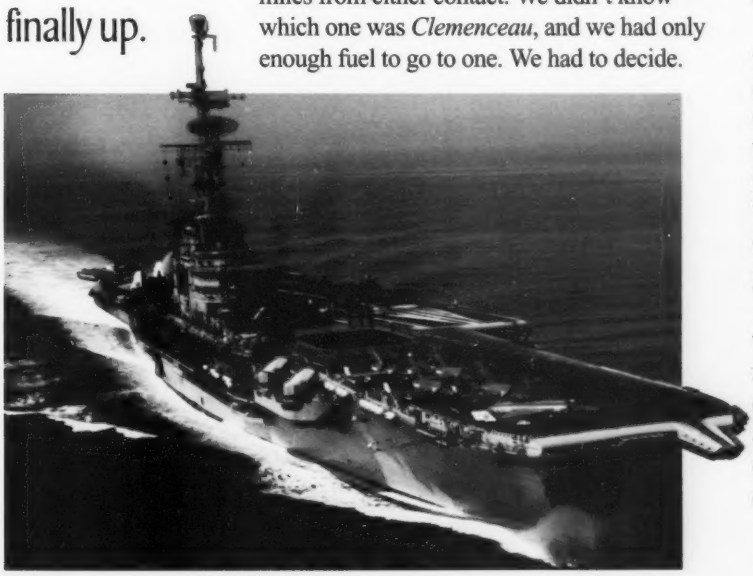
The HAC spoke to the ship's CO on the datalink. After a very brief but thorough discussion among the entire flight crew, the captain, and the ASTAC, we decided the best option was to go the *Clemenceau*. The French carrier was less than 30 miles away. They were calling the weather clear. We called for vectors, turned to pigeons, and set maximum range airspeed, but were not able to get a TACAN lock. We held two radar

Couchez Avec les Poissons?

I was about to make the ditch recommendation to the HAC when the ASTAC told me that *Clemenceau*'s TACAN was finally up.

contacts on the same bearing line, approximately eight miles apart. *Clemenceau*'s pigeons corresponded with the farthest contact. We were well on our way to our divert VFR deck when the carrier reported a newly formed fog covering. We were back to square one, but now fully committed to landing onboard *Clemenceau*. We didn't have enough fuel to return to our ship.

The HAC was talking with *Clemenceau* and USS *Saratoga* for flight following. I was talking to *Clemenceau* for pigeons and the ASTAC for positions. The aircrewman was busy comparing the information we were getting from the French and our ASTAC, as he also backed the pilots up on all the radios. We passed over the first radar contact and flew eight miles to the French carrier. But when we closed to within four miles, *Clemenceau* still reported us at eight miles. Our best guess now was that we were four miles from either contact. We didn't know which one was *Clemenceau*, and we had only enough fuel to go to one. We had to decide.



Sara was asking for our lat-long for reasons that didn't appeal to me. At this point, we had less than 10 minutes fuel, were in the goo, and did not know which way to go. I knew we had to find a deck immediately, or begin planned-ditch procedures. With fuel this low, any abnormal nose-up attitude could cause a flameout. I didn't want to do a full-auto at night with zero visibility.

I was about to make the ditch recommendation to the HAC when the ASTAC told me that *Clemenceau*'s TACAN was finally up. I immediately tuned the channel. The needle swung with a DME indication. I felt some relief. The low-fuel lights had long since been steady. At least, the flickering was gone. We descended to creep up the stern of the ship, only seeing the drop lights when we were very close. We got dangerously low on the radalt and recovered after calls for power from the aircrewman.

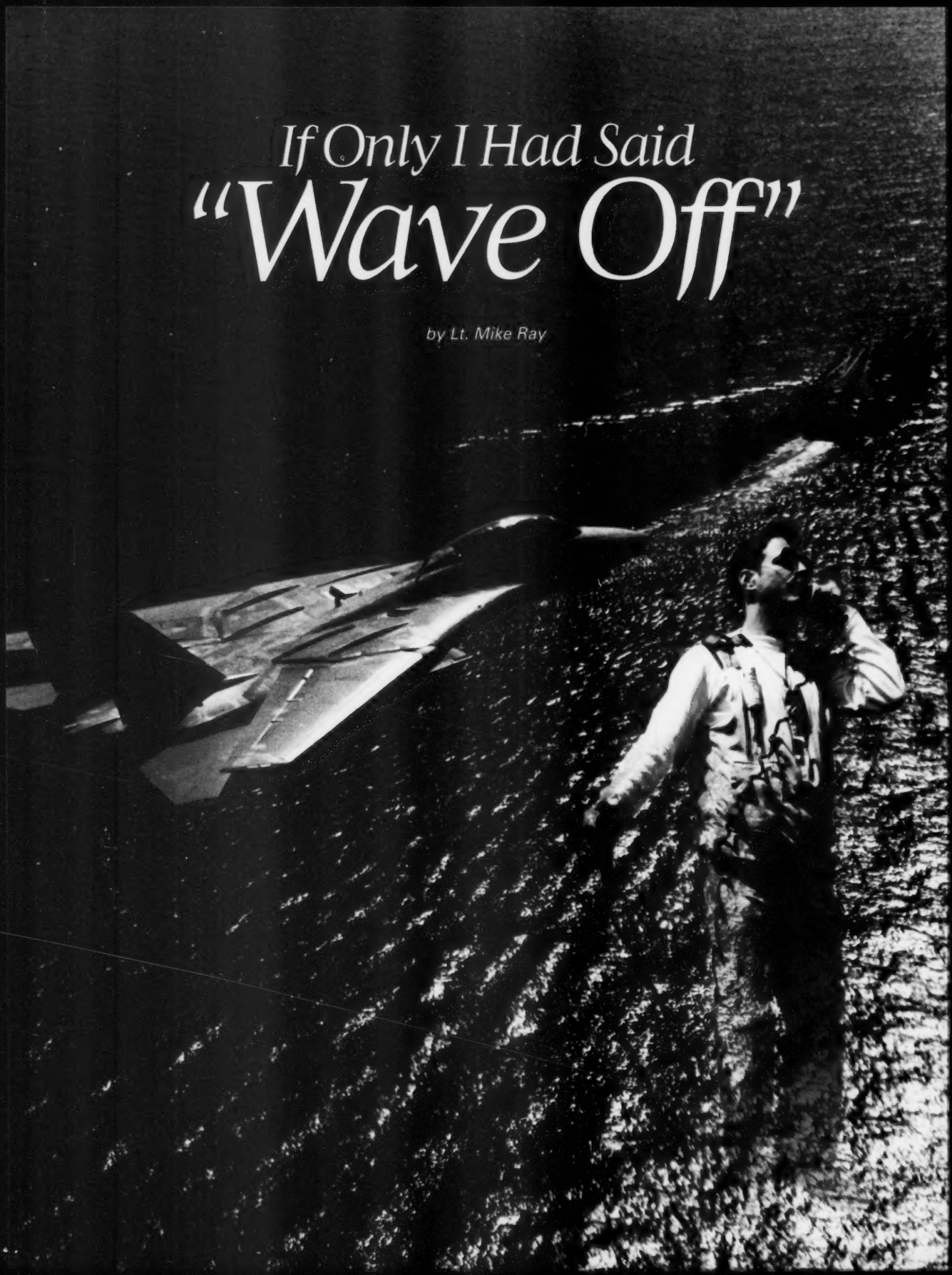
We followed the drop lights up and over the deck. We inched forward over the stacked aircraft on the flight deck, followed the deck approach lights one by one to the base of the tower, and landed with less than five minutes of fuel in zero-zero conditions. We were only 20 feet from the island, but the Air Boss could barely make out the dim glow of our position lights.

Our crew was fortunate to have been together on deployment for the last six months, spending hundreds of hours in the cockpit, and knowing each other's strengths and weaknesses. Without excellent crew coordination, I am sure that this flight's ending would have been tragically different.

Lt. Oldham is a HAC, flying SH-60Bs with HSL-46.

If Only I Had Said "Wave Off"

by Lt. Mike Ray



We had been on cruise for nearly two months, and the weather was just starting to improve as we headed farther south en route to the battlegroup's operating area. My waving as an LSO under training was going quite well. I was getting a significant amount of pickle time and had been controlling LSO regularly at night. Today was the kind of day that carrier aviators and LSOs dream about: natural winds straight down the angle and a steady deck.

The recovery was going smoothly—no bolters, no waveoffs and a few OKs. As the last aircraft approached the 180 position, the 5MC blared with the Boss's voice, "We have a Tomcat that needs to recover now. He has possibly taken FOD down one of the engines and will be doing a straight-in. He also reports that he has no DLC and unreliable AOA."

CAG paddles called tower to get the details. The Boss said that the Tomcat had had some problems tanking. The tanker's drogue had hit the dual chin pod of the F-14D, shattering the IRST dome. The Tomcat reported no indications of engine FOD, and all other systems were normal. CAG paddles took the pickle and my team leader assumed the back-up LSO responsibilities.

The Tomcat appeared at about 3.5 miles on centerline and ready to start the approach. When the F-14 was at two miles, I borrowed the binoculars from the LSE to see if there was any damage to the aircraft.

At that distance, I saw no signs of problems or engine difficulties. The damage to the IRST was still not apparent. However, the Tomcat didn't look right. I looked at the entire aircraft to pin down what was wrong and realized that the F-14 didn't have its auxiliary flaps down. I told CAG paddles. He asked, "What does that do to the aircraft's approach speed?"

"It will be about two knots faster than normal," I replied.

The Tomcat was not in its normal landing configuration and that bothered me. I wanted to tell CAG Paddles to wave him off so that the aircrew could tell us exactly what was wrong with the aircraft. I kept asking myself why the aircrew didn't tell the Boss about the flap problem. Maybe they didn't know!

CAG Paddles analyzed the current winds over the deck, which were about eight knots higher than the minimum required for a Tomcat, and proceeded to bring the Tomcat aboard. The F-14 crew continued the approach and, at three-quarters of a mile, called the ball.

CAG Paddles rogered the ball call and said, "You look a little fast." The Tomcat seemed to be approaching the deck much faster than I was accustomed to seeing. The aircraft cleared the ramp with a power call by paddles and caught the 1-wire on the fly. As the aircraft came to a stop, the Boss asked the aircrew if they knew they had landed with no auxiliary flaps. There was a long pause, and then the Boss asked the aircrew to sweep the Tomcat's wings all the way forward. From the platform, I was amazed as I saw the wings of the Tomcat move forward about 15 degrees. I thought back to my response to CAG paddles' question about what effect would no auxiliary flaps have on the approach speed of the Tomcat. I should have said, "Wave off the Tomcat!"

Obviously, there was more to the Tomcat's problems than the aircrew knew. The LSO must make sure every aircraft that traps is in the proper landing configuration. The Tomcat should have been sent around and the crew told about the auxiliary flaps. This warning would have let the aircrew review the landing checklist and prevented the trap of a Tomcat with its wings still configured for tanking.◀

Lt. Ray flies with VF-11.

... the 5MC blared with the Boss's voice, "We have a Tomcat that needs to recover now."

There's No Such Thing

Boy, what a day to go flying. You roll out of bed on a cold winter morning, not really wanting to leave those nice, warm sheets to dance around on a cold floor. Grabbing a cup of coffee for the road, you throw on your flight jacket because it is cold outside. Good choice, because you find your car covered with frost and it takes time for your car to heat up.

You make it to work, brief your flight, and head out to preflight.

"This isn't good," you say to yourself, as you see the same frost on your airplane that you saw on your car.

"Oh, well," you say, "it's only a little bit of frost, and my mean war machine has plenty of excess thrust available."

Is this a good decision-making process? It's a very understandable one, and you could probably fly that airplane away on a typical flight. However, those of you who have recently studied any FAA exams will recognize the problem with the frost. The FAA notes in one of their questions that "a layer of frost equivalent to a medium or course sandpaper will reduce the lift generated by a wing by 30 percent and increase the drag generated by 40 percent."

Given those huge reductions in the wing efficiencies, how well are you going to fly when you lose an engine on takeoff and have frost on your wing? How well are you going to climb if you've taken off near your maximum gross weight, have to make a hard turn for noise abatement, and you're 300 feet off the ground? A little risk assessment here: you're risking the loss of an airplane to save the few minutes it would take to remove the hazard.

The airlines have found out the hard way just what structural icing does to performance.

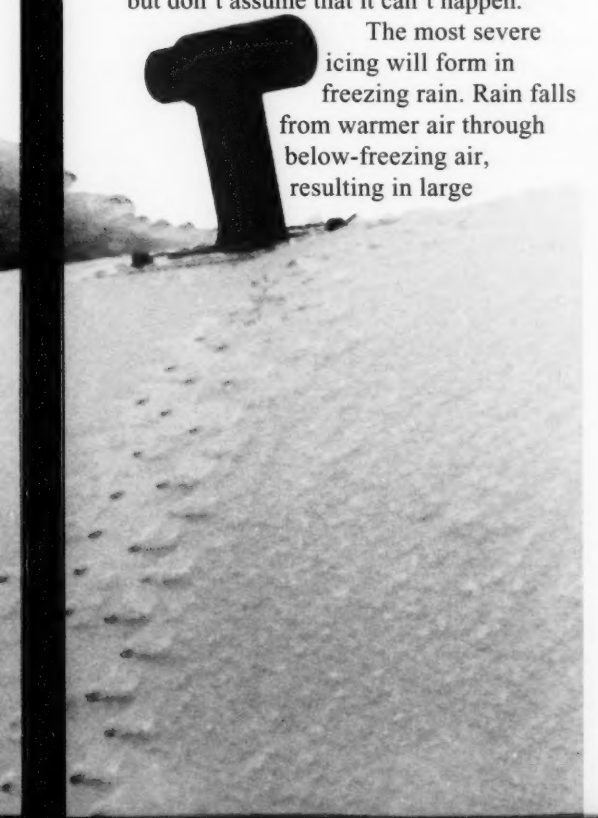
as a Little ICE

by LCdr. Ken Skaggs

Most of us remember the horrifying photographs of Air Florida Flight 90 landing in the Potomac River after the crew took off with visible ice on the wings.

So if you have frost or ice on your wings before flying, get it removed. You can use deicing fluid or you can tow the plane into a hangar. If you tow the plane into a hangar, be sure that no water remains in the control surfaces to freeze once the airplane is back outside. You don't want to trade an inefficient wing for binding flight controls.

What about inflight icing? For ice to form on an airframe, there must be visible moisture present and the temperature must be at or below freezing. Most ice forms between 0 and -10 degrees Celsius. Icing rarely occurs below -20 degrees Celsius, but don't assume that it can't happen.



The most severe icing will form in freezing rain. Rain falls from warmer air through below-freezing air, resulting in large drops of super-cooled water which freeze instantly on contact. The result: large quantities of clear ice. The way out is clear – climb to warmer air above – but freezing rain always results in moderate to severe icing, so you may accumulate ice so fast you can't climb above it.

"Not me," you say. "I have plenty of excess thrust available, and I have anti-icing or de-icing equipment." However, even a small buildup of ice can decrease lift by 30 percent and increase drag 200 to 500 percent. Severe ice also implies that aircraft de-icing systems are unable to keep up with the ice accumulation. Also, the ice may be forming aft of the deicing equipment.

The other problem is that if you're seeing ice on your wings, you have ice forming in other areas. The Tomcat and Prowler communities have documented cases of ice forming in their intakes and breaking off during arrested landings, FODing the engines. And as an AOPA Air Safety Foundation pamphlet notes, "There is no such thing as a little ice." That's because if you're seeing ice form on relatively blunt surfaces such as the leading edge of the wing, you have more ice on the sharper edges of the tail surfaces. As odd as it sounds, ice forms more readily on sharp edges than on blunt edges.

Beware of ice building up on your plane, and be aggressive in getting out of icing conditions. As you can see, even a little icing can ruin your day. If you'd like more information on icing, talk to your local meteorologist.◀

Portions of this article are reprinted courtesy of the AOPA Air Safety Foundation from their Aircraft Icing Handbook. For copies, call 1-800-638-3101.

"a layer of frost equivalent to a medium or course sandpaper will reduce the lift generated by a wing by 30 percent..."

Helicopters and ICE

by LCdr. Chris Spain

"Flights shall be planned to circumvent areas of forecast atmospheric icing (and thunderstorm) conditions whenever practicable." This NATOPS restriction is particularly significant to helo pilots since most of our aircraft have no deicing capabilities. Unfortunately, we of the rotary-wing persuasion can find ourselves in situations where icing conditions are pretty much the norm.

During the winter of 1992, we were flying two CH-53Es from sunny Sigonella to the frozen fjords of northern Norway for Teamwork '92. You can't get from Italy to Norway without crossing a mountain range. All of the IFR routes in Europe are above 10,000 feet, so we were restricted to VFR flight below 10,000 feet because of our aircraft ceilings.

Let's think about this. VFR, through the mountains, in the middle of winter. Amazingly, we made it to Norway with only a couple of ice-detected lights and one inadvertent IMC.

Once we arrived in scenic Andoya, Norway, we found conditions even more challenging. We didn't need any weather reports, because conditions were always the same — VMC with occasional isolated snow storms. Trouble was, the "isolated" snow storms would come on very suddenly and ferociously.

After aborting a couple of flights because of icing, I found myself (as OIC) explaining why we couldn't get a flight out. Our ops boss was a fixed-wing reserve colonel who had a general dislike of helo pilots (I think it was a deep-seated jealousy). Armed with the CH-53E NATOPS, which says we can fly up to 30 minutes in light icing or unlimited time in trace icing, he was certain we were being fair-weather wimps for aborting these flights. A few facts that helped change his mind:

1. OPNAV 3710 restriction from flying in forecast icing conditions.

2. Although H-53s have systems for detecting and preventing ice, they have no de-ice capability.

3. While NATOPS lets us fly in trace or light icing, we have no means (other than visual) of determining how much ice we've accumulated, or how fast it is accumulating.

Additional concerns and hazards were:

1. Loss of lift. Helo rotor blades are "wings" that are susceptible to the same degraded performance and loss of lift as fixed-wing aircraft.

2. Increased drag and gross weight. Again, degraded performance.

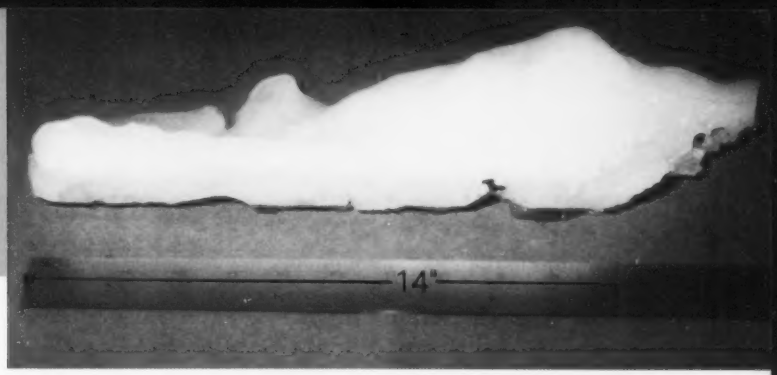
3. TFOA. Accumulated ice thrown from the main rotor blades or fuselage could hit the tail rotor, causing loss of tail rotor control. On the ground, ice can be a deadly projectile for ground crew.

The colonel and I reached a happy compromise with just a few reasonable precautions. As operators, we never aborted a flight because of weather. We immediately notified our taskers and customers if weather caused delays, and we provided an estimate of when we might get the mission out. No one tried to second guess our decisions concerning safety of flight. If the HAC decided that a mission could not be completed, we aborted the flight after making a reasonable attempt. Following these guidelines, we had a successful operation and returned to "Sunny Sig." ◄

LCdr. Spain is the Head of the Rotary Wing Branch of the Naval Safety Center.

CQ Icing Hazards

by Capt. R.J.Roshelli



This ice was removed from the top of the third intake ramp of an F-14 after recovery. Fortunately, this engine was not FODed because the ice did not come loose on arrestment. Based on debriefs, the Prowler ice damage probably occurred at lower, warmer altitudes when the ice broke free and entered the intakes.

The air plan included a mix of events for day and night CQs. Weather for the morning schedule was forecast to be 15,000 scattered with broken layers at 3,000, 8,000 and 20,000 feet. Weather briefs called for light rime ice between 3,000 feet and 12,000 feet, changing to moderate rime ice later in the day and night. Visibility was decreasing slowly from seven miles.

After the last day event landed, respot for the 1900 launch continued. Four Tomcats, six Hornets, and three Prowlers launched with a mix of other aircraft. Pilots later reported some icing during the climb to marshal. Tomcat drivers saw caution lights for intermittent inlet ice, while Prowler crews reported icing on airframes and windscreens up to 15,000 feet with ragged tops at 19,000 feet.

CATCC initially assigned the F-14s marshal altitudes between 16,000 feet and 19,000 feet, but moved them to 6,000 feet, 7,000 feet, and 8,000 feet 10 minutes before the push.

The EA-6Bs climbed to 17,000 feet through 19,000 feet for their initial marshal. Thirty minutes into the cycle, pilots began asking for higher altitudes because of icing. The Hornets were the last to launch, and almost immediately, they started asking for altitude changes.

During penetrations, the F-14 crews noted more intermittent inlet-ice indications, and the Prowlers reported seeing rime ice with increased fuel flows. One Prowler had momentary engine chugs on final. Five engines had been damaged by ice FOD and had to be removed.

Obviously, the weather during these events was prime for icing. The weather forecasts called for icing all day, but CATCC did not receive any icing reports from previous recoveries. During debriefs, F-14 and EA-6B crews said that the conditions and cockpit indications were typical of those they had experienced over many years of flying, without engine damage. The Tomcat pilots mentioned several times that they had not seen any ice on their planes' surfaces.

Years of experience and misconceptions about airframe icing probably led these crews to assume everything would be OK. The absence of visible airframe ice in potential icing conditions does not mean that the inlet ducts and other critical areas are free of ice. Unfortunately, the F-14 ramp areas are prone to ice and can accumulate significant amounts that the aircrew can't see.

The Hornet's extreme sensitivity to ice and its ability to detect inlet ice provided pilots with real-time information of inlet-duct temperatures. Hornet pilots aggressively evaded icing conditions and followed NATOPS procedures for penetrating icing conditions. No FA-18 engines were damaged during this recovery.

Section 18 of Extreme Weather Procedures provides detailed data on how to deal with airframe and inlet icing. Hornet and Tomcat NATOPS state in small print that "extended operations in icing conditions should be considered an emergency." Careful attention to weather briefings is essential, and pilots need to clearly understand what constitutes icing conditions for their specific aircraft.◄

Capt. Roshelli is a Naval Reservist with CARGRU 0867. He is a commercial pilot, and flew A-7s as a naval aviator.

Bravo Zulu

AD3 Dante Arpon
VFA-81

While doing a final check of an FA-18C, AD3 Arpon found a bolt protruding from an engine-bay door. He gave a thumbs down to the plane captain who immediately stopped the pre-launch sequence.

After shutdown, he opened the engine-bay door and found a broken clamp in the afterburner actuator line.

AD3 Arpon prevented a possible in-flight emergency caused by a jammed throttle or flight controls.

ATAN Robert S. Saez
VAW-115

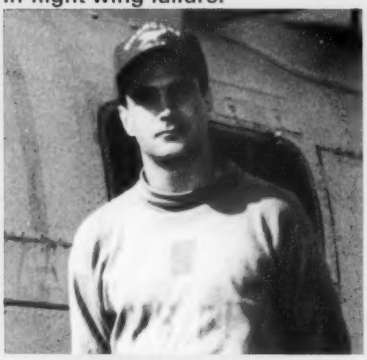
ATAN Saez was on his way to launch Liberty 602 when he noticed the starboard nose tire of Liberty 601 didn't look right. He returned to the hangar to tell QA. QA and airframe mechs found the bearings had disintegrated and damaged the axle. Continued operation would have cracked the axle and the nose wheel could have left the axle. ATAN Saez's discovery prevented a mishap.

AD3 Brian V. O'Leary
VAQ-33

After repairing a fuel leak on an EA-6A, AD3 O'Leary inspected the wheelwell before reporting the job done to his supervisor. He noticed a hairline crack in the center wing of the forward box-beam assembly. He told Maintenance Control of the possible defect and wrote a MAF against the aircraft.

Investigation by an NDI technician revealed a five-inch crack through the entire depth of the fitting. The squadron requested a depot repair to fix the discrepancy.

AD3 O'Leary prevented an in-flight wing failure.



ADAN Jeffrey Smith
HS-14

While conducting a day launch for an SH-60F, ADAN Smith (plane captain and LSE) noticed a fire midway down cat 3. The fire was close to the tail of the helo, so he called the Air Boss.

The Air Boss ordered the steam-smothering system activated but it didn't extinguish the fire. When a second fire ignited beside the aircraft, ADAN Smith recommended launching the SH-60F immediately. The Air Boss concurred and ordered the aircraft airborne.

ADAN Smith's quick thinking averted a life-threating situation and saved an aircraft.

Sgt. Kenneth M. Twiddy, USMC
15th MEU, FMF

Antler 32 landed aboard an LPD to drop off two passengers. While awaiting combat-cargo personnel, Sgt.Twiddy (crew chief) briefed the two passengers to exit through the right-gunner's door of the UH-1N.

When combat-cargo personnel arrived, Sgt. Twiddy motioned to the passengers to exit towards him. Instead, one of them went out the left gunner's door and proceeded aft.

Sgt. Twiddy, standing abeam the right ginner's door disconnected from the ICS and ran around the front of the aircraft to stop the passenger. As the passenger bent down to cross under the tailboom, abeam the tail rotor, Sgt. Twiddy tackled him. Both Marines rolled under the tailboom but remained clear of the tail rotor. Sgt. Twiddy's immediate reaction saved the Marine from being killed by the tail rotor.

We've Been Doing It That Way for Years

by AMSC T.K. Folds and AMH1 Jeff Lyman

Looks like a giant clam trap...

Don't use chocks to hold up the over-wing fairing of a Tomcat. Remove the fairing to work in that area; don't shinney up under it.

As I walked through the hangar bay, I noticed an airman lying beneath the over-wing fairing of an F-14B, doing maintenance. What caught my attention was a pair of aircraft chocks on top of the aircraft. As I got closer, I could see the chocks were propping up the over-wing fairing. I'd never seen this done before, nor had I ever seen anyone lying under the fairing to do work.

I checked with an airframes QAR, who had about 10 years experience in Tomcats. He said, "We used to do that, but our wing staff said not to put chocks under there because they break the attaching points. That would be a depot-level repair (P&E)."

I sent photographers to take some pictures and showed them to the MMCO, who used to be an F-14 metalsmith. His reply was, "We've been doing it that way for years!" I told him I'd not seen it done before today. He laughed and shook his head as he walked away.

I still wasn't sure this practice wasn't allowed, but common sense told me it was unsafe. I checked the MIMs procedure on removing the over-wing fairing. There was nothing in there about leaving the front two bolts in place and propping up the over-wing fairing with a pair of chocks. In fact, the NA 01-F14AAA 2-4-4.2 WP 118 00 states in steps 11 and 14 to remove the bolts.

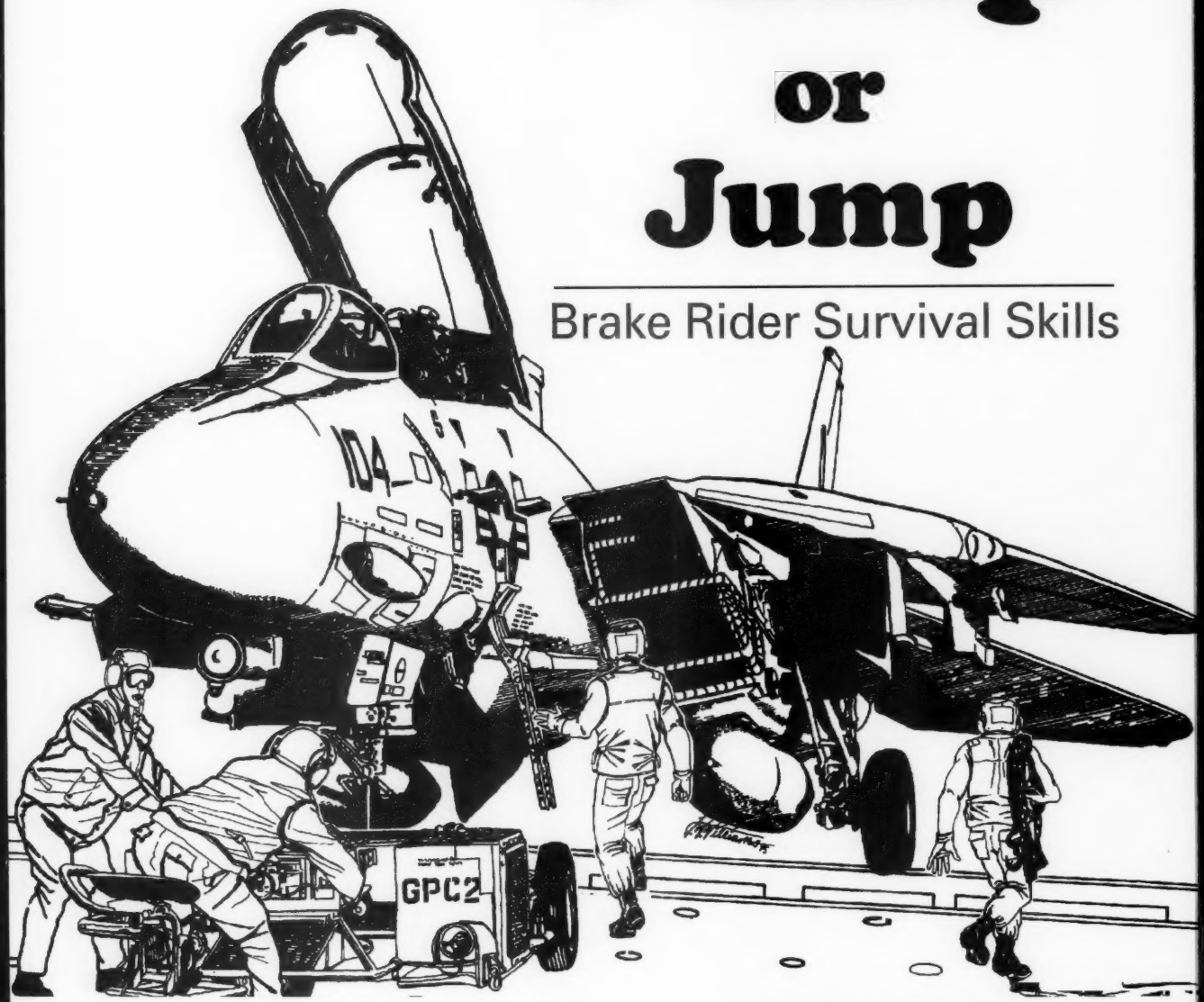
It takes only 10 minutes to remove the two bolts and move the over-wing fairing out of the way, so why weren't we doing it? The answers are simple: improper training and "We've done it that way for years." Old habits are hard to break, but if they don't get broken, people will keep practicing unauthorized maintenance. Forget the damage to the aircraft; what about the potential injury to the Sailor lying under the fairing? ➤

Senior Chief Folds was an airframes analyst for the Naval Safety Center before he went back to the fleet. He is now a Navy recruiter. AMH1 Lyman is an airframes QAR.

by Lt. John L. Larson

Pump or Jump

Brake Rider Survival Skills



Early morning — the major respot is not yet half complete. The CV is underway in deep swells, with intermittent showers and a strong wind denying her a PIM advantage. Restacking the hangar bay, the move crews have been hustling all night, with aircraft on the roof awaiting their turn in the basement.

An F-14 has just arrived at the hangar bay. The handlers attach a spotting dolly and release the tie-down chains to roll her off the elevator and into the bay. As the director signals the brake rider to release brakes, the ship begins a lazy roll to starboard. The spotting dolly is no match for the 45,000-pound airplane on the slick deck; the Tomcat begins to slide toward the deck edge.

"Chocks in! Brakes on!" The director repeatedly tries to move the jet carefully, each time confounded by the ship's slight starboard list and slow rolls. Each try requires the brake rider to release and reapply brakes. In one fateful attempt, a hard starboard roll overcomes the spotting dolly's tugs to control the aircraft, and it rolls with the ship. Whistles scream! Chock walkers cannot place their blocks in the way of the rapidly accelerating aircraft, and the spotting dolly is dragged helplessly along the slick deck as the aircraft rolls towards the edge of the elevator.

The brake rider finds the brake pressure depleted from continuous use. Facing the possibility of a dark, cold swim, he pumps the brake accumulator furiously to rebuild pressure. As the Tomcat's mainmounts top the deck edge coaming, his efforts reward him with a sudden, gratifying halt. Calling in reinforcements, the move crew uses a tow tractor and careful timing to coax the Tomcat into the hangar bay and away from danger.

In the tight confines of the flight deck, every aircraft move is a careful balance of knowledge, practice and teamwork. Luck is a factor as well, but not to rely on. With the deep swells and slippery deck this night, the margin of safety was slimmer than usual. The brake rider's knowledge of his job and awareness of his peril helped him decide what to do to save himself and his jet.

While every aircraft handles differently on deck, the principles are the same. With the F-14, a gauge in the nose wheelwell indicates brake-accumulator pressure to 3,000 psi, while a gauge in the front cockpit gives only a simple green or red zone indication of parking and auxiliary brake-accumulator pressure. This gauge indicates the brake applications remaining with the current accumulated pressure.

When the toe-pedal brakes deplete pressure to 1,425 psi, the shuttle valve in the power brake mod shifts to the auxiliary accumulator. In the absence of a pressurized combined-hydraulic system, the wheel-brake accumulator can only be recharged by the hand pump with the landing-gear handle in the down position. Then, as brakes are cycled, pressure comes from the accumulator only, which provides 13 to 14 applications when fully charged.

When you use the brakes, the aux-brake needle moves from green into the red. Once in the red, approximately five applications remain. If allowed to deplete completely, the toe brakes are no longer available, and the parking brake is all that remains.

Even though braking action is available at pressures less than 1,000 psi, braking force is proportional to the pressure remaining. Red-band pressure (approximately 1,900 psi) is sufficient to hold brakes locked with the aircraft stationary. Rolling motion demands much more pressure. It may take 2,100 psi to stop a rolling aircraft on a deck surface up to four degrees. In deck rolls over six degrees, 3,000 psi may not be enough.

Keep in mind this guidance in the Aircraft Handling Manual (NAVAIR 17-1-537): Do not man aircraft with brakes that don't work, keep the brake pressure high enough to finish the job. Not all aircraft have parking brakes.

Make it a practice to pump the aux brake and parking brake into the green band before you break down and move the aircraft without combined hydraulic power. Keep the indicator in the green band until the aircraft is secured. A full 3,000 psi of pressure is required in severe conditions (greater than four-degree rolls or wet decks). ◄

Lt. Larson is the MMCO of VF-21.

Do not man aircraft with brakes that don't work...

$24,000 Shortcut

by AME1 Alston N. Constran

A few days before leaving for a work-up period aboard USS *Nimitz*, we removed the canopies and seats from 706 to do a CAD change. After the change, I assigned two AMEANs to re-install the aircraft's canopies and hatches. They'd done this job several times and were two of the best technicians in my work center.

Several days before the CAD change, we'd replaced the two front canopies on the same aircraft because they had been badly scratched. At that time, the men noted the canopies were a bit more difficult than normal to install.

This was the second windshield destroyed in six weeks.

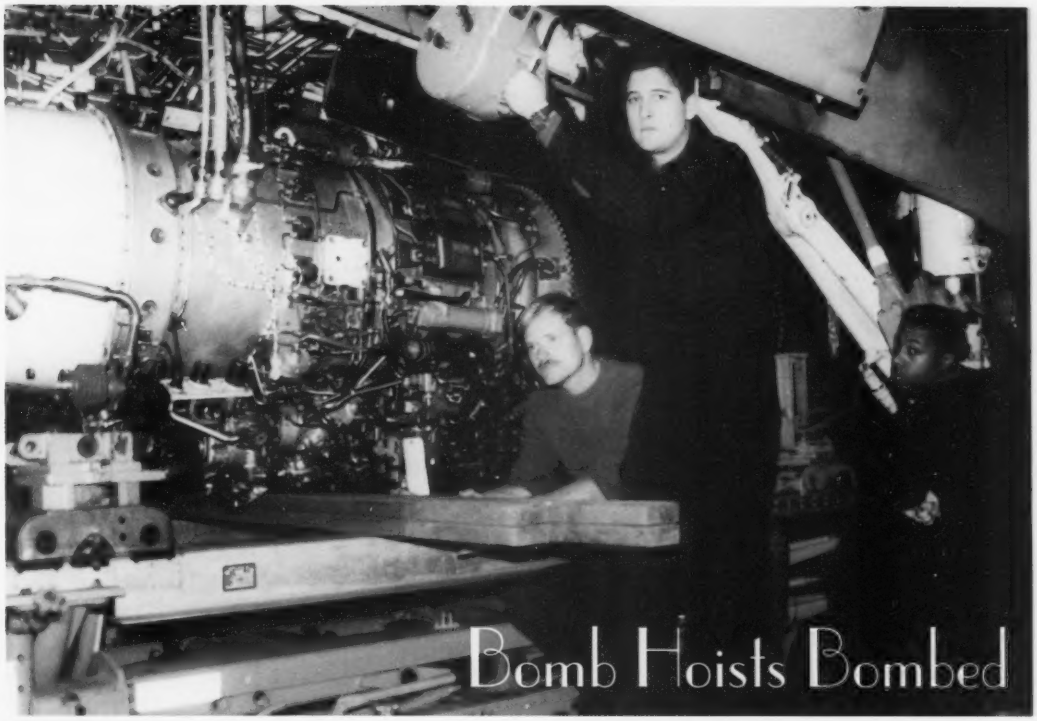
This time, the TACCO/SENSO hatches and the pilot canopy went on easily. With only the copilot canopy to go as their shift wound down, the men's thoughts turned to liberty. They wanted to finish the job quickly.

In their rush to get the job done, the two AMEANs skipped a step and began to install the copilot's hatch. They did not place a protective pad on the windshield. They thought, "What the heck. The S-3B windscreen withstands aerodynamic loads up to 450 knots, so it must be one tough piece of glass." While one airman placed the screws, the second followed with a speed handle and tightened them down.

One screw was hard to tighten, so the second airman increased his pressure. The extra pressure caused the speed handle to slip and smack the windscreen. The windscreen shattered in a microsecond. The airmen stared in disbelief; they were in shock. This was the second windscreen destroyed this way in six weeks, and the MO was sure to express his displeasure.

The AMEANs' shortcut earned them a visit with the CO. It cost them both half a month's pay and a reduction in rate. It also cost the command $24,000 for a new windscreen, plus the extra man hours needed to install it. Viking 706 sat on the ground for two weeks awaiting parts. Shortcuts don't pay off in the long run. ◄

Petty Officer Constran is a day-shift supervisor in VS-33.



Bomb Hoists Bombed

by AD1 David Gruwell

We decided to yo-yo the starboard J-52 after trouble-shooting two hot starts. An exciter box had failed. Mechs moved the Prowler from the flight deck and spotted it on the hangar deck. They checked out two bomb hoists and a 4000 stand.

The J-52 had accumulated over 100 hours and also needed a cavity inspection. Day check would stay and help remove the engine and heat shield. Maintenance Control required an FCF by the following afternoon, so we had plenty of time.

We disconnected the engine, positioned the 4000 stand and installed both bomb hoists. We devised a quick game plan to position the mechs. After we reviewed safety precautions and made sure everybody was in place, we pulled the pins on the engine mount. We had lowered the J-52 two feet when the forward bomb-hoist clutch slipped. We could not raise or lower the engine. Something had to be done quickly.

I told the mechs to find some shoring. The QA SCPO located six 2-by-4s, and we placed them perpendicular to the rails of the stand, directly under the gear box. I ordered all hands to stay clear of the engine in case the bomb-hoist clutch slipped again.

After stacking the 2-by-4s, we raised the forward part of the stand to position the wood under the gear box. This put the stand at a 45-degree angle with the gear box resting on only one stack of 2-by-4s. After we released tension on the bomb hoist, we replaced it with another hoist. If the ship had rolled, or if the aircraft had moved during the bomb-hoist swap, the engine could have broken the 2-by-4s, which could have hurt someone or damaged the engine and airframe. It was a tense 30 seconds.

After we installed a new bomb hoist with the tension taken up, we lowered the stand and removed the shoring. For the second time we resumed lowering the engine. Everything was going smoothly until the new hoist failed with the engine mounts only 10 inches from the yoke. This time the hoist handle froze. Again we pumped up the stand to meet the engine, and the mounts were seated into the yoke. With the help of a fourth hoist, we completed the job.

Even though GSE lets you check out equipment, that doesn't mean it's always good to go. This isn't the first time a bomb hoist failed in the EA-6B community, and I don't expect it will be the last. ◄

Petty Officer Gruwell is assigned to VAQ-130.

Greaseman armed for the work.

It's Only Routine Maintenance

by Lt. Mark Kanakis

Sounds easy, doesn't it? Routine maintenance. No sweat, under control, everyday, been-there, done-that maintenance. Aircrews don't get hurt because of routine maintenance. We see slips and trips, eyes poked, cuts, burns, and bruises from human error, but endanger an aircrew? We have no critical parts to remove and replace, no functional check flights to sweat. What could happen?

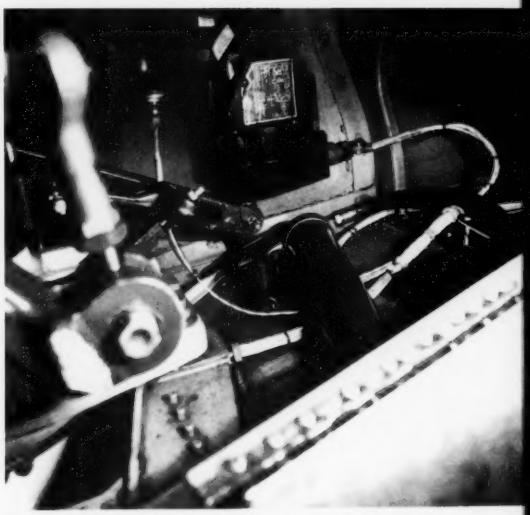
Two airmen from my shop walked out to the wash rack to lube an aircraft. As Airmen Greaseman and Cleanup walked to the aircraft with a grease gun and a known number of rags, they decided to split the job. Cleanup started, but Greaseman got bored and left for a break.

The wash rack got too lonely for Cleanup after a while, so he laid down his grease gun for a coffee break. Greaseman returned and didn't find the grease gun, so he got another gun and started working.

Cleanup returned from the coffee mess and was impressed with Greaseman's initiative in doing the lion's share of the work. Cleanup left the scene again to get petty officer Eyeball to CDI the work. While Eyeball inspected Greaseman's portion of the job, maintenance control interrupted and sent him to troubleshoot a turning aircraft.

Later that evening, PO Eyeball returned to the shop to find Airmen Greaseman and Cleanup awaiting their next assignment. He made sure someone put the grease gun away and counted the used rags. Then they moved the aircraft to the flight line for the next day's launch. A plane captain, Airman Catchall, did a daily and turnaround inspection.

The next morning, Lt. Doublecheck found a grease gun in a flight-control compartment during his pre-flight inspection -- the last chance to prevent a mishap worked.



Four people missed seeing the grease gun before the pilot found it in the flight-controls compartment.

Four people screwed up doing routine maintenance. Where was the tool-control program during this simple lube job? Airmen Greaseman and Cleanup showed poor coordination, no attention to detail, and didn't inventory their tools after the job. Their supervisor, Petty Officer Eyeball, did not complete his inspection and glossed over the inventory at the end of his shift. The plane captain missed the grease gun during his inspection.

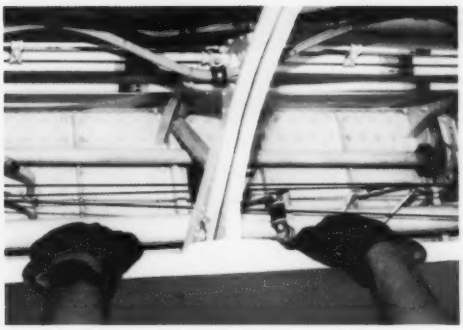
A worker signed the job complete. A CDI signed the job inspected. A plane captain signed the daily and turnaround inspection. Shift change occurred with tools signed and accounted for. Maintenance Control released the aircraft safe for flight. Still, the danger from routine maintenance went undetected.

People make mistakes. How *safe* is your routine maintenance? ◄

Lt. Kanakis was in HC-3 when this incident happened.

Flap Trap

by AMSC(NAC/AW) Richard J. Grace



It may be handy, but this isn't the place to rest your hands.

Attention to detail, situational awareness and sticking to SOP — do we use these phrases so often that we take them for granted?

Ten years ago, I was a plane handler in a P-3 squadron. Even though I considered myself the best, hardest working lineman in the division, my past performance and qualifications didn't save me from poor headwork.

I agreed to work a weekend shift for a friend; I almost won a permanent disability. While monitoring a power cart for a low power turn-up of a P-3, I stood under the starboard wing at the trailing edge. The flaps were at the takeoff/approach position, and my hands were resting on the lower trailing edge of the wing. I was waiting for the lineman in front of the aircraft, who was directing the turn, to signal me to disconnect the power cart once No. 2 engine started.

As I waited, I saw the lineman acknowledge a signal from the crew in the flight station of the aircraft. Shortly thereafter, the flaps moved toward the full-up position. I didn't realize the danger soon enough — in a matter of seconds the flaps closed on my gloved hands. My hands were not hurt, but I couldn't pull them out. I was not in immediate danger, and the situation became somewhat humorous as I tried to signal the lineman by kicking my legs.

Finally, another lineman saw what was happening and his eyes got very big. He quickly signalled for the flaps to be lowered.

I made several mistakes during this "routine" maintenance job, underscored by my complete lack of awareness. It was a weekend and my mind was on things other than work. My hands should not have been resting on the trailing edge of the wing. I was looking at the lineman, but not giving him my full attention (I think we all know another expression for that). The lineman didn't notice that I wasn't clear of the flaps before giving the crew in the flight station the OK to move them.

I can't explain why my hands weren't crushed between the flaps and the wing's trailing edge.

When you work around aircraft, you must stay aware of what is going on around you and your buddies. Flight decks and flight lines are always congested; they are never "routine." ◄

Chief Grace is the Safety/NATOPS Department LCPO for VP-45, and a flight-engineer instructor for the P-3C aircraft.

...you must stay aware of what is going on around you and your buddies.

You Gotta Watch the Details

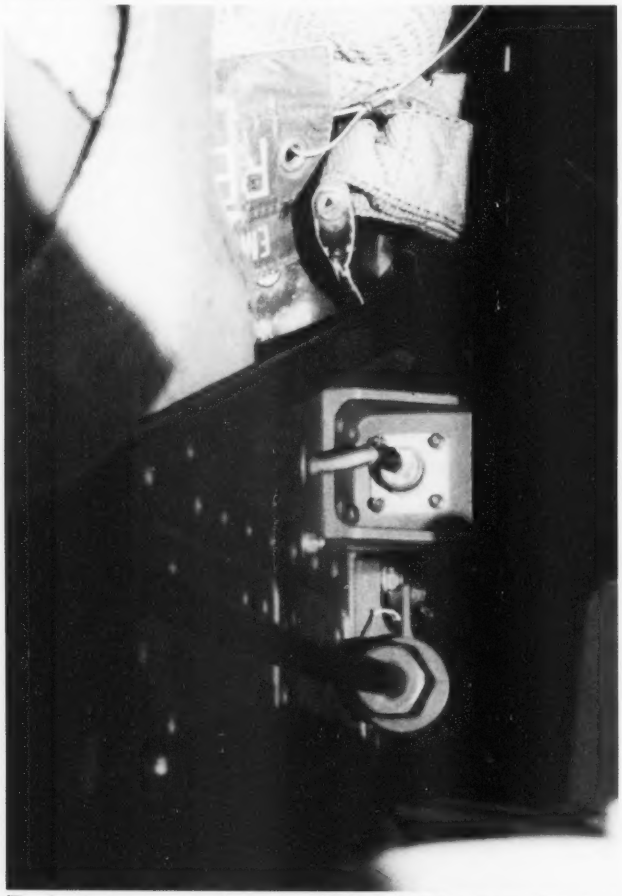
by ATCS(AW) William Schlitz

During high-tempo ops that included a missilex, we towed one of our aircraft to the missile-loading area to hang some live ordnance as quickly as possible. We had worked long hours and were a tired crew.

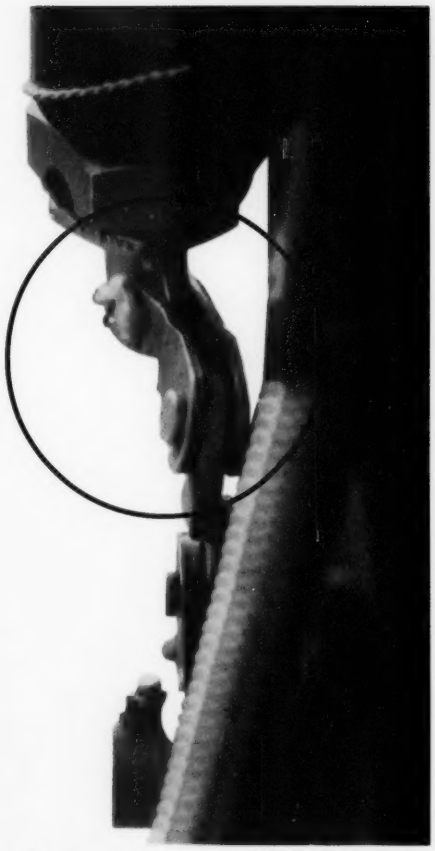
My plane captain started his preflight on the cockpit when he noticed that the lap-belt koch fitting for the front ejection seat had wedged itself between the console bulkhead and the ejection-seat guillotine linkage. He immediately called an AME CDI, who told me the aircraft was down for an unsafe condition.

We determined the lap belt had probably fallen down when the seat was all the way down. When someone raised the seat, the lap belt became wedged between the bulkhead and the ejection seat.We may have been able to avoid this problem with a little common sense. We lost use of an aircraft for the better part of the day while we pulled the seat and replaced the guillotine linkage.◄

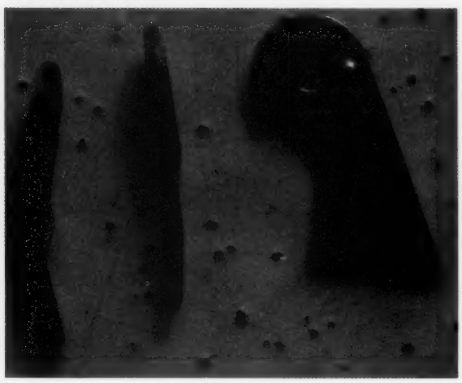
Senior Chief Schlitz was assigned to VF-302.



The lap belt is caught between the bulkhead and ejection seat.



The ejection-seat guillotine linkage was bent when someone forced the seat up while the lap belt was wedged between the seat and the bulkhead.



CROSSFEED

Cdr. M.B. Pearsall
Head, Aviation Maintenance and Material Division

AZCS(AW) Dan Steber
Editorial Coordinator

SUPERVISION

Anatomy of a TFOA

Anonymous

When we came to work that night, we knew we had a busy shift ahead. My supervisor was on the flight line covering a launch. He had told me to attend the maintenance meeting. Our branch, airframes, had its usual full plate of tasking.

The priority aircraft was in the hangar, so I grabbed a helper and headed off to our first job. I assigned the remaining up-gripes to two airmen in the shop.

One of the jobs was beyond the ability of either of the airmen. A rib with an anchor nut broken off had to be fixed. The rib would need repair before the anchor nut could be properly installed.

One of the airmen had removed most of the screws from the access panel and put the screws and the VIDS/MAF back in the shop.

Later that night, the two airmen were briefing the supervisor, who had just returned from the flight line, on the jobs they had completed. They explained the type of work required on the rib, but failed to mention that they had removed several screws from the access panel. The VIDS/MAF and the screws were sitting on a workbench in the shop.

The supervisor had worked all day; when he secured, he left me in charge. After inspecting all the gripes completed that night, I told the airmen to do a tool inventory and clean up the shop before securing.

I saw those screws on the bench and told them to put them back into the parts bin. They hadn't told me they were removed from an aircraft ready to go flying the next day, and I didn't bother to ask where they had come from.

The next morning the aircraft went flying. Shortly after takeoff, the pilot reported that he felt something had fallen off the aircraft. Post-flight inspection revealed a missing trailing-edge access panel from the horizontal stabilizer. You guessed it: the same panel my two airmen had worked on was now missing.

Several things caused this TFOA:

•The VIDS/MAF was never called into work. The maintenance chief had mentioned this the night before at the maintenance meeting.

•The passdown from the airmen to the supervisor and to me on the status of the access door was incomplete.

•Consumables-control procedures were lacking. When I saw those screws lying on the bench, I should have asked were they had come from. I was in too much of a rush to secure the shop.

Analyst's comment: The plane captain didn't spot the screws missing from that panel when he did his daily/turnaround inspection, and the aircrew missed it on their preflight; a troubleshooter or final checker could have noticed the screws were missing if the panel was visible from the deck. Not putting the MAF in work eliminated the only clue that there might be a problem. — AZCS(AW) Dan Steber, Naval Safety Center.

LINE

Nobody's on First

by LCdr. Tom Ganse

Communication breakdown causes many ground mishaps. A clearly defined chain of command is essential to maintenance; somebody has to be in charge. If somebody isn't, then nobody is.

During post-start checks, an AV/ARM troubleshooter almost became chopped beef when he approached an engine that was still turning on an FA-18. The pilot had noticed a "LOAD-X" advisory and called for a troubleshooter.

Meanwhile, a second troubleshooter approached the aircraft from the port side because the PC had spotted a hydraulic leak. That troubleshooter signalled the pilot to cycle the flight controls and then called for shut down.

Before shutdown, the first troubleshooter approached the aircraft from the starboard-aft side, out of view of the PC. He noticed a trainee on the starboard side and asked if the starboard engine

was running. The trainee didn't know. The technician, believe it or not, placed his hand in front of the engine inlet to see if there was suction. He still couldn't tell if the engine was running.

Then he got the pilot's attention and tried to ask if the starboard engine was running. He signaled the pilot to shut down No. 2. The pilot interpreted this question as a command to secure the starboard engine so the troubleshooter could look at the LOAD-X gripe. He returned the shut-down-No. 2 signal as an acknowledgement.

The AV/ARM troubleshooter assumed the pilot's signal meant that the engine was secured. He moved into the intake area to open a panel. The pilot tried to wave him away from the intake, but couldn't get his attention. He immediately secured both engines.

We got lucky that time. We had a happy ending and learned several valuable lessons. First, only one person can be in positive control of an aircraft. Second, the PC "owns" the aircraft before taxi. He and the pilot are a two-person challenge-and-reply team. The PC relinquishes ownership only after getting acknowledgement and confirmation from the pilot. Third, all maintenance on the aircraft must be coordinated through the PC.

Mishap files are littered with incidents of poor communication — cases where maintenance actions go uncoordinated and someone gets hurt. Keep lines of communication open and simple. Be sure all your players know the play before the ball gets snapped.

LCdr. Ganse is a mishap investigator at the Naval Safety Center.

Analyst's comment: Ground-crew coordination training (GCT) is just as important and useful as aircrew coordination training (ACT). LCdr. John Schmidt, a Naval Safety Center physiologist, has developed a GCT presentation that mirrors ACT. All the factors, including communication, that are highlighted in ACT apply to GCT. A GCT presentation is part of each Safety Center maintenance malpractice presentation during safety surveys and at other times upon request. — AZCS(AW) Dan Steber

AIRFRAMES

It's Raining Canopies

by AMEC(AW) Larry Beilharz

How much do you know about your aircraft's canopy system? How much does everyone else in your command know about canopies? Since 1980, Navy people have jettisoned 24 of them by mistake.

Two people pulled the wrong handles when trying to open or close canopies. Jet exhaust blew another one off. Eight mishaps happened during servicing operations, seven on A-6 aircraft. Someone had failed to install the cartridge-lock pin on each of these aircraft. Improper training or lack of supervision caused 13 inadvertent jettisons. The canopy for an FA-18 costs $82,000.

Many of these incidents could have been prevented if maintainers had received proper training and followed the MIMs. We should remember an old rule that has always worked for me: "If you don't know what it does, don't touch it."

Chief Beilharz is a maintenance analyst at the Naval Safety Center.

An Aircraft's Worst Enemy — Corrosion

by AMHC Douglas Madara

The average maintainer will tell you that to remove sealant or flaking paint from an aircraft, he uses a scraper, wire brush, razor blade or the good old buck knife. When asked why he uses such harsh methods, he tells you the NA 01-1A-509 says it's OK. That's true to a point, but if he would read the manual completely, he would learn something.

Chapter 5 of the 509 manual says you can use wire brushes, scrapers and wire brush wheels to remove corrosion. However, the tool must be a material compatible with the aircraft surface. The same holds true for removing sealant and flaking paint.

Maintainers should use wire brushes to remove heavy corrosion deposits or paint that is not tightly bonded to the metal surface. You can get wire brushes with aluminum, steel, stainless steel and brass bristles. The brush must not cause galvanic corrosion.

Stainless steel is considered neutral and may be used on all aviation equipment. Once this type of brush is used on steel, it should not be used to clean aluminum or magnesium. Particles of steel

in the brush may become embedded in the softer metal. This opens the door to corrosion.

You can use scrapers primarily for the initial removal of heavy corrosion deposits in corners and crevices that cannot be reached with other devices. Scrapers may be locally manufactured from phenolic plastic, fiberglass composites, aluminum or carbide-tipped steel. You can use plastic scrapers on any metal surface.

Use aluminum only on aluminum or magnesium surfaces; use steel on steel surfaces. Surfaces cleaned with scrapers must receive further finishing or treatment because the gouging action of scrapers may cause corrosive products to be embedded or hidden. Failure to use the correct metal scraper can lead to galvanic corrosion after you have returned the part to service. For further guidance, refer to NA 01-1A-509.

Chief Madara is assigned to HSL-37.

PHAN Gary D. Delaney

AMS2 Jesse Lopez inspects for corrosion on the flaperon bell crank of an EA-6B aboard USS *Nimitz*. Holding the flashlight is ATAN Al Marchbanks. Both men are members of VAQ-138.

HAZMAT

Catching a Buzz Could Be Lethal

by Lt. John Davison

A young shipmate aboard our carrier died trying to "catch a buzz." Bored by weeks at sea, he searched for new ways to get his kicks. He discovered freon. His body was found in a fan room.

Inhaling vapors from substances such as gasoline, glue, freon and other fluorocarbons from spray cans is a dangerous practice. Some people don't realize those vapors are deadly. The vapors produce a feeling of euphoria by depriving the brain of oxygen. Brain cells require oxygen to function and depriving them of oxygen kills them. That lack of oxygen affects heart tissue, too.

The chemicals in freon and other fluorocarbons are toxic to heart tissue and frequently cause fibrillation: rapid chaotic contractions of the muscle fibers of the heart that result in a lack of synchronism between heartbeat and pulse. The heart has an extremely complex and fragile timing system; tampering with its natural electrical impulses can cause it to stop beating, so fibrillation can kill.

Fibrillation can also be caused by drinking too many alcoholic beverages. Cardiac arrest by alcohol poisoning commonly occurs after a long period of abstinence, such as a lengthy at-sea period when the body has not had exposure to alcohol for some time. This is known as a "holiday heart."

Alcohol is a toxin. It is poisonous to tissue just like the substances mentioned above. Moderate drinking will not produce this effect, but continuous alcohol intake over many hours, and drinking many shots or purely alcoholic drinks like Long Island Iced Tea, increases the odds of acute poisoning.

Death from drinking to excess or inhaling toxic substances is a fairly common cause of death. Exercise good sense on the job and moderation on liberty; don't add to the statistics.

Lt. Davison is a BN and DAPA officer in VA-95.

Analyst's note: What should you do if you find someone who has been poisoned? If he's conscious, take him to sick bay or get help from the emergency response team. If your command has one, call the poison-control center for suggestions for action.

If he's unconscious, is he breathing? Is his heart beating? If either answer is no, he needs CPR. Are you qualified to administer CPR? If not, find someone who is.

If time permits, and you can determine what the poisonous substance is and how it was administered, refer to your MSDS sheets to learn what you can do until trained medical help arrives. -- Lt. Anil Taneja was a flight-surgeon analyst at the Naval Safety Center before he transferred to Portsmouth Naval Hospital.

Know What You're Pulling

by Lt. Barrie Hartley, RN

Did you ever want to pull a handle or push a button to see what it does? Here's what can happen.

Maintainers had removed the pilot's seat from an AH-1W helo and stowed it in a work place for maintenance. This was not a standard seat; it had been modified and fitted with a cartridge-activated canopy-removal system (CRS).

A pilot thought the seat was safe because it was off the aircraft. For some unknown reason, he removed the CRS handle safety pin and pulled the handle. Bang! "What the hell was that?" he must have thought. He had initiated the internal cartridge-activation device (CAD).

This was the first time a CAD had been fitted to a helo seat used by the Marine Corps. People who work with rotary-wing aircraft would not be as aware of the danger as those who work with ejection seats on fixed-wing aircraft.

When working with armed seats, personnel should follow these safety rules:

a. Seats fitted with CADs should be handled and stored by authorized personnel in a designated and approved area.

b. Unauthorized and unnecessary personnel should be restricted from the area.

c. Post hazard warnings in the maintenance area and include a "Seat armed" or "Seat dearmed" warning notice on the seat.

Lt. Hartley is the head of the Naval Safety Center's Aviation Life Support Systems Branch.

John W. Williams

MAINTENANCE MANAGEMENT

Helo Blades Gone Awry

by Capt. Kevin G. Emery, USMC

Mechs folded, strutted and tied down a CH-53 in the forward bone, perpendicular to the bow. The crew chief noticed the tail rotor windmilling with the pylon still folded. The tail-rotor blades repeatedly hit the No. 3 main-rotor blade.

The crew chief quickly pumped the pylon fold system manually until the pylon was far enough away from the fuselage to keep the blades from hitting.

Unwritten squadron procedures called for securing all folded tail rotors by looping a blade rope around the lowest tail-rotor blade and tying it to the fin of the No. 2 auxiliary fuel tank.

This helo was PMC because the tail-rotor actuator and hub crown weren't installed; they would have prevented the windmilling.

OPNAVINST 5442.4M, Mission-Essential Subsystem Matrix (MESM), states that aircraft PMC for pylon-fold subsystems should not be folded while embarked aboard ships. Once again, habit and not following the MESM damaged an aircraft.

Capt. Emery was head of the Power Plants Branch for Maintenance Analysis at the Naval Safety Center before he transferred to HMT-303.

ORDNANCE

Things That Go Bang During Maintenance

by Ed Luther

Of the 19 accidental detonations reported by aviation commands in September 1995, 17 were CADs. Maintenance people caused nine and ordnancemen fired one. Seven of the 17 (41 percent) were fire-extinguisher CADs. A sampling of mishap-report narratives follow.

External power to an A-6E was interrupted during release-and-control checks. Upon restoration of power, the team leader restarted the checks. Thinking the checks were done, a team member installed a filler plug and one Mk-2 impulse cartridge in station one's AERO 7A bomb rack. The CAD fired when the breech came in contact with the breech barrel just as the checks began. The MER dropped to the deck.

During a phase D inspection of an FA-18, two CADs fired when the maintenance crew tested the fire-extinguishing system. The crew took shortcuts instead of following the MIMs; an inexperienced person was assisting with the procedure in the cockpit.

Mr. Luther is a weapons safety specialist at the Naval Safety Center. You can call him at (804) 444-3342/3343, DSN prefix 564.

September 1 thru 30 1995 Conventional Ordnance Deficiencies

Type	Inadvertent Activation	Malfunction	Fail to Test	Observed Defect	Other	Total
Aviation	19	71	14	68	21	193
Shore	3	3	0	3	4	13
Submarine	0	0	0	0	0	0
Surface	1	6	5	3	4	19
Total	**23**	**80**	**19**	**74**	**29**	**225**

	Losses		Causal Factors			
Type	**Deaths**	**Injuries**	**Personnel**	**Material**	**Design**	**Other**
Aviation	0	0	36	122	0	35
Shore	0	1	8	4	1	0
Submarine	0	0	0	0	0	0
Surface	0	1	4	15	0	0
Total	**0**	**2**	**48**	**141**	**1**	**35**

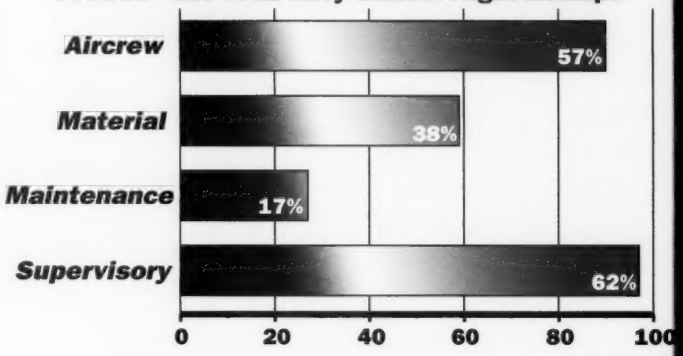
What Caused Class A Flight Mishaps

FY91-95* (*Data subject to change)

Aircrew

Inadequate flight preparation/aircraft preflight failure to perform adequate preflight of aircraft, weather, maps, fuel, maneuvers, etc.	11
Misused flight controls on the ground	3
Takeoff	5
Failed to see aircraft/object in time to avoid collision	14
Misjudge distance/altitude/position; result impact aircraft/object	15
Retracted landing gear	1
Improper use of flight controls in the air; not takeoff/ landing not including takeoff and landing phase	**23**
Misused engine controls	6
Improper use of/inattention to fuel system procedures	1
Exceeded physical/stress limitations of aircraft	3
Failed to maintain flying speed	12
Improper instrument procedures	14
Did not extend landing gear	1
Landing phase ashore; landing and waveoff ashore not LSO controlled	3
Landing phase LSO/LSE controlled; ashore/afloat	5
Improper use of miscellaneous equipment	9
Failure of aircrew coordination	**43**
Failed to supervise flight properly	4
Exceeded ability/experience	10
Violation of existing regulations/instructions/NATOPS	**26**
Other	4
Total	**90**

FY91-95* 157 Total Navy Class A Flight Mishaps



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004	PUBLIC AFFAIRS OFFICER	LCDR K. SKAGGS	47416
06	MARINE LIASON OFFICER	LTCOL J.ROGISH, USMC	43321

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10A	SECRETARY	P. WOLFF	46856
101	EXECUTIVE ASSISTANT	J. CATALDO	46278

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111C	FA-18	CAPT J. JACQUES, CAF	46118
111D	UAV	LCDR D. SEAGLE	45712
111F	FA-18	LCDR T. GANSE	46350
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112B	S-3, T-45, TA-4, T-2	LCDR J. MYERS	46556
112C	P-3, TC-4C, C-12, C-39	LCDR D MORTON	46556
112D	E-2/C-2, T-34, T-44	LT C. KEMERER	46556
113	ROTARY WING BRANCH, H-1, H-57	MAJ M. ROBERTS, USMC	46576
113A	H-46	LT L. HEPBURN	45712
113B	H-2, H-60	LCDR M. BURAN	46576
113D	H-53	LCDR C. SPAIN	45712
114A	AIR OPS BRANCH, FUELS, CFR	LCDR V. STELLA	46435
114B	ATC	ACCM J. WATSON	47078
114D	AIR OPS, CAT A/G, TERM	ABEC R. ROBINSON	47078

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122B		AMEC(AW) L.L. BEILHARZ	45918
123	ANALYTICAL DATA BRANCH	AZCS(AW) D.W. STEBER	48308/3494
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124B		VACANT	
125	AVIONICS BRANCH	CWO4 W.C BLANKS	42206/3494
125A		AECS(AW) K.C. PARKER	46312/6512
126	CONTRACT MAINTENANCE BRANCH	VACANT	
126A		VACANT	
127	AIRFRAMES BRANCH	LCDR J.A. MANN	42206/6497
127A		AMCS(AW) J.C. HAMM	42206/6497
127B		AMCS(AW) N.E. WINNETT	42206/6497
127C		SSGT W.E. CHAMBERS	46312/6512
128	POWER PLANTS BRANCH	CWO5 T.A. GREGORY	46648
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128B		ADCS(AW) R.M. ALBERT	42206/6576
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